Introduction

This report is intended to detail the next steps that need to be undertaken in the delivery of the Lusail City Education strategy, from a design and technical standards perspective.

It has been developed using the agreed and approved Masterplan for Lusail city as its base, however it seeks to enhance and complement the requirements as set out in the Masterplan, focussing specifically on the development of the Education Plots.

The Design standards and guidance contained within this document seek to ensure that the architecture and urban design conforms during the build out of the educational plots at Lusail City. These guidelines are to be read in conjunction with the Development Control Regulations issued by LREDC and applied in addition to regulations, standards and guidelines issued by the Supreme Education Council (SEC) and Ministry of Education and Doha Municipality (Where applicable).

The standards described set out what will be considered as a ***minimum requirement*** by LREDC for private school facilities to which all schools seeking licensing are expected to conform. These requirements define both entitlement and obligation.

The document should be read and referred to in conjunction with the suite of documents that have been developed as part of this commission, particularly:

- **The Lusail City Education Policy** which outlines the agreed vision, mission and ambition for the City's education provision;
- **The Market Research and Pupil Place Planning Report** which details the research that has driven many of the key decisions on how to deliver the agreed vision;
- **The Business Models and Financial Viability Report** which identifies the agreed Governance and Management model and the rationale behind it; and
- **The Education Procurement Report** which sets out the suggested procurement process to ensure that the most suitable School Operators and linked with the relevant Developers to develop the required school plots.

Alongside these key documents are / will be a selection of shorter briefing notes and documents which relate to specific engagements with stakeholders and other key providers / agencies which are necessary to create the enabling backdrop for the success of the Lusail City Education Strategy. These include:

- A working document outlining a potential collaborative model with the SEC (drawn for the Business Models report);
- A briefing note regarding discussions with Shafallah, relating to the specific provision for Special Needs when required for students within the City (either designated or in-school);
- A Financial Modelling toolkit for central use in testing proposals by Developers and Operators, with a narrative on operation, and
- A Pupil Place Forecasting toolkit for central use in onward monitoring of the demographics and demand levels within the City with a narrative on operation.

The suite of documents are designed to ensure that a culture of collaboration, support and quality assurance is central to the on-going operation of education services within the City and fully linked to the relevant education elements of the Qatar National Vision 2030. Through this approach, the City will secure an outstanding system, positioning Lusail as a world leader in education provision and making it a destination of choice for both residents and employers.

Document Outline

The development of the standards outlined in this document has involved research and analysis to determine the optimum route to progress the City's education strategy in order to maximise the outcomes for LREDC, the SEC, Developers, School Operators, the residents and children of Lusail City and the City as a whole.
The document summarises the key components and strategies that, from a design perspective, should inform and control the 'shape' of Education at Lusail on a city-wide basis and also at an individual plot level. The key components and strategies have been defined as follows:

DESIGN GUIDELINES AND STANDARDS

A wide range of approaches is encouraged within Lusail City with the aim of creating a vibrant and varied environment, but of the highest quality. This chapter sets out additional / specific requirements for all schools at Lusail, including:

- Development Review Submission requirements of LREDC
- Adherence to Masterplan Principles
- Space Standards and Program
- Access, parking & Drop-Off
- Security
- Landscaping
- Technical / Environmental Standards
- Sustainability and GSAS

PROPOSED SCHOOL / CURRICULUM MIX

A wide range of school operators need to be procured to provide the diverse education establishments that are required across the city to meet the needs of the anticipated community demographic. This section contains a strategic recommendation for location of varying different types, grades and curricula around the city, following a review of the available sites, the communities / character areas within which they sit and their anticipated demographics.

'HUB AND SPUR' PRINCIPLE

By developing a holistic city-wide vision, with a clear set of stated requirements for all education operators within the City, the opportunity exists to create a world-class educational system rather than a collection of individual schools. In this way, it will be a leading location for educational innovation, recognised as a hub of educational excellence. A 'Hub and Spur' principle, for some establishments, would support this by optimising land use while still enabling best facilities to be provided. Operators will all be required to commit to a culture of collaboration, camaraderie and the sharing of best practice to benefit the City as a whole, rather than just their individual schools. We therefore believe coupling some of the smaller neighbourhood sites as primary schools with Senior Schools that sit in the Education district could provide a single-operator with a community school and a larger facility in the education district (Hub) which the junior school could access to use specific facilities.

MEDICAL EMERGENCY CENTRES

The provision for Emergency Medical Centres (EMC) is to be provided within the Education facilities at Lusail City. The EMCs are intended to provide shelter, treatment or quarantine areas in cases of Emergency that would threaten the wellbeing of all or part of the community the City, during an emergency situation, and would at this stage be taken over and operated by the authorities. This section outlines recommended locations (North, Central and South) and outlines minimum facilities required.

ACCESS

In conjunction with our evaluation of suitability of school plots for varying typologies and curricula, we have also considered their accessibility, with particular respect to the following criteria:

- Close proximity to Arterial highways - good for those entering or leaving the development for pick up and drop off
- Immediate access (250m) to public transport (LRT) increasing accessibility, particularly for senior students and staff
- Highways access on more than one side - enabling 'flow' of traffic around the site for drop off etc.

PLOT-LEVEL DESIGN CODES

The plot-level design codes aim to demonstrate how the built up area, open space, and parking provision for each of the education facilities can be accommodated on each of the sites. These are intended as guidance and are intended to still leave scope for the owners and their respective design team to provide alternative solutions. Where Educational Facilities are to be provided within plots containing other built structures (EG Kindergartens within podiums of tower plots)no physical design guidance is given, but technical parameters are provided. Guidelines for the Education district are based on a national masterplan developed for this exercise. These are illustrative only and subject to change following LREDC's finalisation of revised masterplan for this area.

EDUCATION DISTRICT - DEVELOPMENT

A definitive decision needs to be taken on the allocation of more space within the City for education provision to meet the forecast demand once the City is fully operational. It has been discussed that a 'Northern Education District' should be developed to absorb excess demand. This would achieve the following aims.:

- Allowing for a more phased approach to the development of the 'Education City' provision –i.e. one sub district at a time
- Reducing the traffic burden in the current 'Education District' area at peak times of the day.

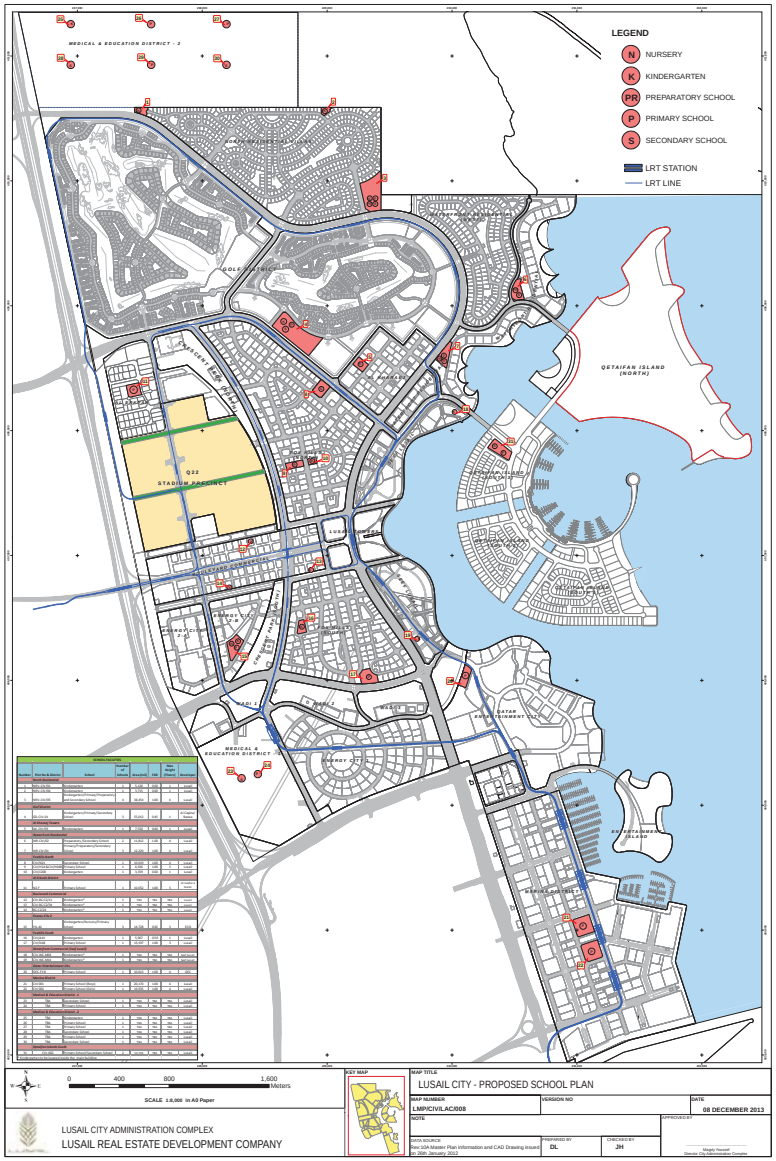
This would make the education plots more attractive to providers, and allow some space within the Education District South to be reallocated to Key Worker Accommodation.

SUMMARY

We believe that the application of the policy and guidance documents will create an outstanding education system, rather than a collection of individual schools, positioning Lusail City as a world leader in education provision and making it a destination of choice for both residents and employers. This document illustrates how those principles can and should be realised into first-class school design.

Lusail City Proposed School Plan

(Drawing Dated 22 September 2013)



Lusail City Proposed Educational Plot Details

(Drawing Dated 22 September 2013)

SCHOOL FACILITIES							
Number	Plot No & District	School	Number of Schools	Area (m2)	FAR	Max Height (Floors)	Developer
	North Residential						
1	NRV-CIV/01	Kindergarten	1	5,126	0.60	1	Lusail
2	NRV-CIV/04	Kindergarten	1	3,715	0.60	1	Lusail
3	NRV-CIV/05	Kindergarten/Primary/Preparatory and Secondary School	4	38,454	1.00	4	Lusail
	Golf District						
4	GD-CIV-01	Kindergarten/Primary/Secondary School	3	55,012	0.45	1	Al Capita/ Barwa
	Al Kharaej Towers						
5	AK-CIV/03	Kindergarten	1	7,550	0.60	1	Lusail
	Waterfront Residential						
6	WR.CIV/02	Preparatory /Secondary School	2	11,812	1.00	4	Lusail
7	WR.CIV/01	Primary/Preparatory/Secondary School	3	12,229	1.00	4	Lusail
	Foxhills North						
8	CIV/N21	Secondary School	1	10,619	1.00	4	Lusail
9	CIV/H24 &CIV/H04B	Primary School	1	6,936	1.00	3	Lusail
10	CIV/J26B	Kindergarten	1	3,359	0.60	1	Lusail
	Al Erkyah District						
11	N2.F	Primary School	1	10,052	1.00	3	Al Jawhara Green
	Boulevard Commercial						
12	CIV.BC.C2/11	Kindergarten*	1	TBA	TBA	TBA	Lusail
13	CIV.BC.C2/34	Kindergarten*	1	TBA	TBA	TBA	Lusail
14	BC.C2/24	Kindergarten*	1	TBA	TBA	TBA	Lusail
	Energy City 2						
15	PA-42	Kindergarten/Nursery/Primary School	3	14,728	0.92	3	ECQ
	Foxhills South						
16	CIV/A41	Kindergarten	1	5,967	0.50	1	Lusail
17	CIV/D48	Primary School	1	13,197	1.00	3	Lusail
	Waterfront Commercial (Seef Lusail)						
18	CIV.WC.M04	Kindergarten*	1	TBA	TBA	TBA	Seef Lusail
19	CIV.WC.M14	Kindergarten*	1	TBA	TBA	TBA	Seef Lusail
	Qatar Entertainment City						
20	QEC-FV8	Primary School	1	10,013	1.00	4	QEC
	Marina District						
21	CIV 001	Primary School (Boys)	1	20,170	1.00	4	Lusail
22	CIV 002	Primary School (Girls)	1	19,935	1.00	4	Lusail
	Medical & Education District -1						
23	TBA	Secondary School	1	TBA	TBA	TBA	Lusail
24	TBA	Primary School	1	TBA	TBA	TBA	Lusail
	Medical & Education District -2						
25	TBA	Kindergarten	1	TBA	TBA	TBA	Lusail
26	TBA	Primary School	1	TBA	TBA	TBA	Lusail
27	TBA	Primary School	1	TBA	TBA	TBA	Lusail
28	TBA	Secondary School	1	TBA	TBA	TBA	Lusail
29	TBA	Primary School	1	TBA	TBA	TBA	Lusail
30	TBA	Secondary School	1	TBA	TBA	TBA	Lusail
	Qetaifan Islands South						
31	CIV-002	Primary School/Secondary School	2	14,749	TBA	TBA	Lusail

* Kindergarten to be located inside the main building

Lusail City Proposed Education Plan

(Drawing Dated 16 September 2013)

Proposed School Curriculum Mix

Lusail City should include a variety of different school and teaching models to serve a diverse community. Following a study of demographics the following school curriculum types have been identified:

Qatari National School
English Language Mid-Level
English language Upper-Quartile
High Density International

Following a review of the sites and the communities / character areas within which they sit within the city and their anticipated demographics, we have proposed locations for the schools as shown on the adjacent diagram:

Lusail City Proposed Education Plan

(Drawing Dated 16 September 2013)

‘Hub and Spur’

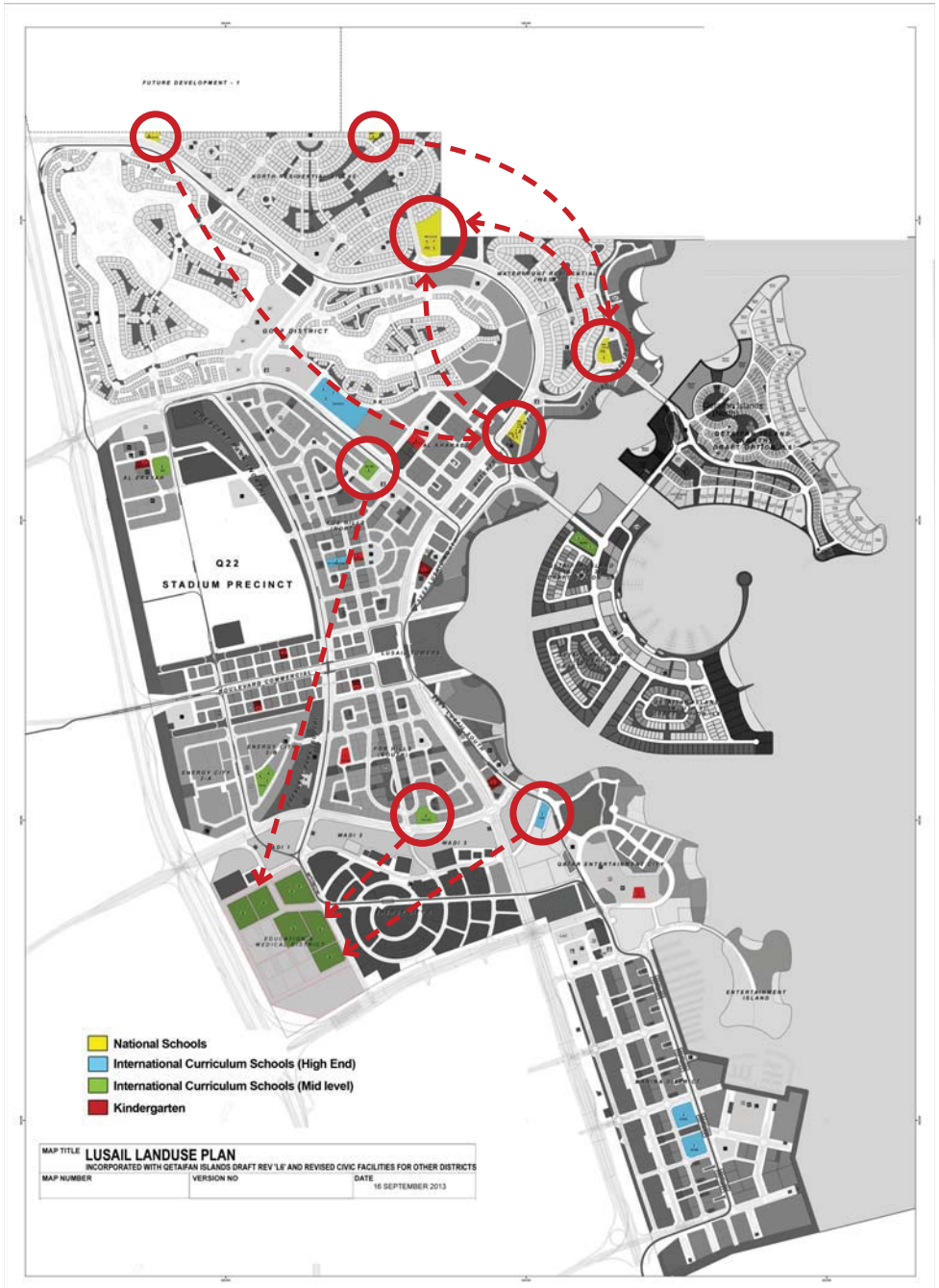
The overall masterplan for Lusail City, which contains an ‘Education District’ provides both opportunities and constraints in its approach. There will be an opportunity to share facilities and to create an education-friendly environment. The disadvantages are that the schools will be further away from the living communities in which students are located, and are likely to be more difficult to access as there could be issues with peak traffic.

We therefore believe the Education District plots are best suited to Senior schools.

The plots located within the residential district of the city are very compact by international standards. therefore although close to their neighboring communities, the level of facilities each site can accommodate (particularly facilities such as playing fields, pools and auditoriums which have a large land-take) is limited.

We therefore believe coupling some of the neighborhood sites as primary schools with Senior Schools that sit in the education district could provide a single-operator with a community school and a larger facility in the education district (Hub) which the junior school could access to use specific facilities.

Sites which could work in this way are shown on the adjacent diagram.



Emergency Medical Centres

The provision for Emergency Medical Centres (EMC) is to be provided within the Education facilities at Lusail City. The EMCs are intended to provide shelter, treatment or quarantine areas in cases of Emergency that would threaten the wellbeing of all or part of the community the City, during an emergency situation, and would at this stage be taken over and operated by the authorities.

The intention is to locate / store facilities and equipment at selected schools to enable the rapid conversion / adaptation of the school, to make a self-sufficient facility (With respect to utilities and supplies) capable of dealing with an emergency situation. In this scenario, parts arts of the school such as classrooms and gyms may be used as dormitory or assembly areas and the student medical centre temporarily upgraded with mobile equipment that has been stored on site.

Locations:
Following a review of available locations and their suitability, it is recommended that three localised centres will be more than sufficient to serve the city, located North, Central, South – in appropriate (i.e. sizeable) schools.

The adjacent plan recommends locations as follows:

North: North Residential Plot NRV-CIV/05
This school is one of the larger plots with good accessibility. It is also recommended as a National School so integration with Government authorities to facilitate the Centre should be straightforward.

Central: Education District
Plots in the Education District will be larger than most other school plots in Lusail and therefore lend themselves to this type of facility. Highways and Public transport access is also good in this area.

South: Marina District Plots CIV 001 / 002
The Marina District is a high-density population area and some distance from the Boulevard / central area, so it is logical to locate on of the centres here. Plots are good size with good highway and public transport connections.

Facilities:
The EMCs should contain the following, which would usually be located in a basement:

- Enhanced Resilience M&E to enable separation from the local services (air filtration, enhanced cooling / heating etc;
- Separate power generation back up
- Storage for equipment and supplies
- Refrigeration units for medicines
- Dry storage – food, bedding etc
- Specific areas that can be made ‘clean’ for basic Medical treatment
- Stored Furniture for rapid deployment to create ‘wards’ or ‘dormitories’
- Enhanced electrical supplies and connectivity to hospital / general medical services

In addition to the above, the facilities will require separate, secure access for deliveries.

The anticipation is that the facility may constitute 1,000-2,000 sqm of additional GFA. Size of the facility will be based on population catchment.

Agreement:
Details of the proposed facility are to be agreed with LRD and layouts submitted prior to submission of DC1 application.

Lusail Education Access Strategy

One of the key considerations in allocating school types to plots is accessibility.

The plots allocated for education use within the Lusail masterplan are distributed around the site and vary in their accessibility. This may ultimately effect school capacity, type of school that is attracted, and plot value.

'Good accessibility' at Lusail is defined as plots that include one or all of the following attributes:

- Close proximity to Arterial highways - good for those entering or leaving the development for pick up and drop off
- Immediate access (250m) to public transport(LRT) increasing accessibility, particularly for senior students and staff
- Highways access on more than one side - enabling 'flow' of traffic around the site for drop off etc.

The adjacent diagram shows how various school plots rate well or less favourably against these criteria.

Improving accessibility of plots:

Within the overall masterplan, it may be possible to increase the number of vehicle access points. This would be subject to further traffic impact studies.

Lusail City Education Facilities Building Design Guidelines

Intent of this document:

The Design standards document seeks to ensure that Key architecture and urban design principles are adhered to during the build out of the educational plots at Lusail City. The standards are to be read in conjunction with the Development Control Regulations issued by LREDC and applied in addition to regulations, standards and guidelines issued by the Supreme Education Council (SEC) and Ministry of Education.

The document presented here sets out what will be considered as a minimum requirement by Lusail for private school facilities to which all schools seeking licensing are expected to conform. These requirements define both entitlement and obligation.

DEVELOPMENT REVIEW:

Demonstration of Design process:
As part of the development review submission to Lusail, owners will be required to submit documentation which demonstrates the planned school's education philosophy, mission, goals and general nature of instructional programs including the learning activities and the spaces in which they shall be housed, the methods of instructional delivery, the materials and equipment to be used, utilities, infrastructure and furniture. Details shall include offered, grade configuration, type of facility, spatial relationships, estimated number of students, list of spaces (specialized, non-instructional support, outdoor spaces, etc.), number and size of spaces, school administrative organization, outdoor areas, hours of operation, safety and security precautions.

Codes and Standards
All school designs shall be required by Lusail to comply (as a minimum) with the development regulations set out by LREDC, the requirements of the Supreme Education Council, Ministry of Education, Qatar Civil Defence. The schools will also comply with the requirements of the local codes and laws. Of all the relevant codes and by-laws, most stringent shall apply.

Submission to Lusail:
The initial submittal to Lusail should contain the outline business case for the school, and a space programme in the prescribed format.

Once the Space Program has been approved, and an appropriate site has been procured, a concept design shall be prepared and submitted for Lusail review. The purpose of this review by Lusail is to verify that the proposed school meets the requisite educational design standards and is intended for educational adequacy. The municipalities and authorities shall provide review and approval for building codes and life safety.

The minimum documentation to be provided includes:

- Site plan, scale 1:500
- Space Programme (In prescribed format)
- Floor plans, elevations and sections scale 1: 200
- Program of spaces :
  Showing the number and area of spaces and description of functions, including: music, ICT, art, science labs and the areas of the cafeteria, gymnasium and all other instructional and non-instructional spaces.

If the intention is that certain functions such as lunch will be in more than one session, the information shall be clearly mentioned.

Conceptual narrative of:

- Structural system
- MEP systems
- Building envelope systems
- Building code and health and safety analysis

Amendments to design

If at any point during the design or construction process the architectural design deviates from the program stated in the concept submission, the owner shall submit a formal request to Lusail for approval.

All renovations or additions that require major change of dimensions or use of spaces including expansion proposals of existing schools, are subject to these guidelines and must be reviewed and approved by Lusail before any work is carried out.

LREDC or their authorized representative may visit the construction site to verify that the Construction is progressing in accordance with the originally approved design.

Lusail City Education Facilities Building Design Guidelines

GENERAL REQUIREMENTS:

INTRODUCTION:

High quality education systems operate from facilities that are safe, attractive, appropriate for learning, environmentally friendly and enriching to all members of the communities they serve. These requirements are fully in tune with the ethos of the Lusail City development and their commitment to provide some of the highest quality education facilities in the country.

General requirements for the design of educational facilities at Lusail City are:

- **Educationally Suitable** – provide multiple teaching and learning environments to accommodate present and future needs.
- **Of the highest Quality** – Of the highest quality within their own particular schools type
- **Stimulating and Vibrant** – create spaces that stimulate creativity and provide eagerness for learning and discovery.
- **Part of the Community** – Schools that contribute and 'give back' the the community of Lusail City as a whole. Facilities that maximise the opportunity created by the Lusail Development's infrastructure including Transport Connectivity, Leisure / Sport Provision and principles of Sustainable Development.
- **Healthy and Productive** – enable students and teachers to achieve maximum potential by providing healthy, safe, and comfortable environments.
- **Robust** – design facilities that are easy to build, maintain, and operate.
- **Sustainable** – minimize negative environmental impacts and maximize the use of non-polluting, renewable resources.

ADHERING TO THE PRINCIPLES OF LUSAIL CITY MASTERPLAN:

The Architectural Design Guidelines support the Master Plan objectives and arguments for Lusail City. Their aims are as follows:

- Ensure that materials used are relevant to the culture and climate of Doha whilst reflecting the high standards of the commercial and living community at the heart of this development.
- Create a local character that is distinguished by its use of performance-based parameters
- Enhance residential liveability and a healthy work environment through performance-based criteria, standards for access to shading, light and air, and inclusion of amenities essential to the desirable urban environment
- Establish appropriate levels of identity and branding without overwhelming the public realm of the development
- Support Lusail integrated transport policy and pedestrian movement strategy through a variety of shaded walkways and passages with a clear way finding strategy to encourage ease of movement
- Apply appropriate building scale and typologies to address Lusail City height and density restrictions

COMMUNITY INTEGRATION

Schools have the potential to be integral parts of community life as they should be the center of the community. The involvement of families and prominent members of society in education, through the shared use of facilities can positively influence the culture of schools as well as impact positively on the surrounding society. This approach is positively encouraged at Lusail City. Further, this will help to build a constituency that shows support for education and emphasize to educators their responsibility for on-going improvements.

It is anticipated that parental cooperation will increase confidence in teachers and administrators, reduce behaviour problems, and boost student achievement; it will also demonstrate to educators that parents specifically and the adult community at large, are proactive participants in the education process.

Whilst it is acknowledged that all schools will be different, each school will be required to demonstrate to Lusail how their school contributes to the local community. Some suggestions are:

- Helping meet some of the community's educational, recreational and wellness needs.
- Being accessible to people of all ages and physical abilities.
- Encouraging active parental involvement and presence in school activities.
- Containing shared public spaces that are accessible year round, on alternate schedules.
- Being places where creative space configurations expand school use, where learning occurs after school, at night, and on weekends, and where school-to-school partnerships, links with businesses, and collaborations with higher education are encouraged and supported.

Lusail City Education Facilities Building Design Guidelines

SPACE PROGRAM

Lusail acknowledge that different types of schools with different curricula aimed at different markets will have differing space standards. However Lusail require the highest standards within each school type and the owner will be required to demonstrate that the space programme for the school benchmarks internationally against the best space standards for the particular school size, type and curriculum.

The Space Program will have a format similar to the example included in Appendix B. It will be reviewed by Lusail.

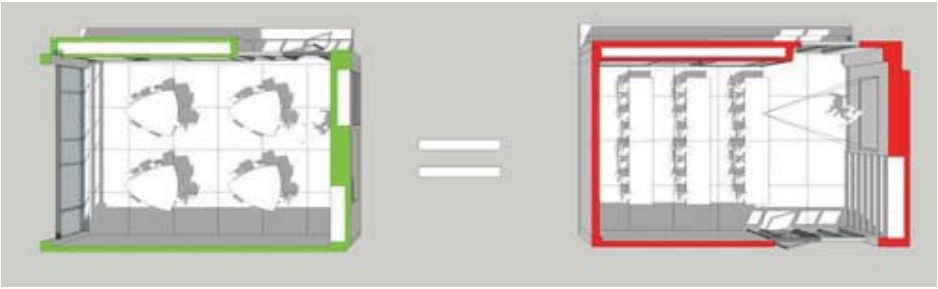
Spatial Configuration
A variety of Learning Spaces and Modes will need to exist in each School to allow students the fullest opportunity to gain knowledge through learning. Developing methods of teaching advocate this approach which is not only about variety but also flexibility and should consider spaces for the following:

- Formal Group Learning – Classroom
- Small Group Learning - Small taught groups
- Informal Group Learning – small independent groups
- Tutorial Spaces – one-to-one tutorial rooms
- Individual Learning – spontaneous and independent Configuration

Standards / Minimum Requirements
The following good practice space standards for international schools should be achieved at Lusail City, as a minimum. Any decrease of these numbers shall be carefully analysed in order to not affect the school business model and at the same time provide a school facility that is safe, conducive to learning and economical to build and maintain.

Class Sizes:
20 students for kindergarten classrooms and 25 students for grades 1 to 12.

Special educational Needs:
1% of total net area shall be assigned to students with special need, and include offices individual attention and to group work.



Libraries & Learning Resource Centers:
The library shall have a minimum of 30 m2 plus 0.20 m2 per student. If there are more than 12 computers in the library, then add 2.4 m2 each additional computer station. Depending on the educational delivery model, up to half of the reading/ reference area function of the library may be dispersed throughout the facility outside the normal library boundaries, where appropriate space shall be allocated.

Laboratories:
- Laboratories that have chemicals shall have a separate lockable chemical storage room.
- Laboratories and preparation rooms must have appropriate ventilation, and emergency shut-off controls.
- The eye/ face wash and safety shower shall be located inside the chemistry laboratories.

Physical education and other recreational areas:
- A minimum, 180 sqm multipurpose play area for up to 1000 students; 350sqm for schools in access of 1500 students.
- Outside learning/ recreation areas shall be calculated at a rate of 0.5 per student, and 50% of this space (excluding playing fields) shall be shaded.
- Multipurpose areas could serve as places for assemblies, physical activities, examinations, public performances, parents' evenings and community events. Dining halls and multipurpose areas could be located next to each other with a folding partition so that the spaces can be combined when they are required to serve larger number of participants.
- Appropriate storage for physical education equipment, chairs etc.

Administration:
- Every school for staff and administration shall include administrative space. In general, allow 0.2 m^2 per student for administrative functions. This would include:
- An office for the principal of at least 12 m^2.
- Work and meeting space for teaching staff.
- A main office with storage space for confidential records and easy access to the reception.
- Additional accommodation for the accounts staff and other administrative staff.
- Photocopy facilities.

Additional requirements for kindergarten are:
- Kindergartens could be either a standalone structure, be integrated into the main school building or a mixed use development, as long as it has an independent access, and a clear definition of its specific areas.
- All kindergarten functions must be located on ground floor.
- The facilities, equipment and access to the premises should be suitable for children with disabilities. Toilets shall be attached to classrooms.
- A multi-purpose air-conditioned closed hall with an area of 90 m^2 suitable for the range of activities is recommended to be in the proximity of the classrooms.

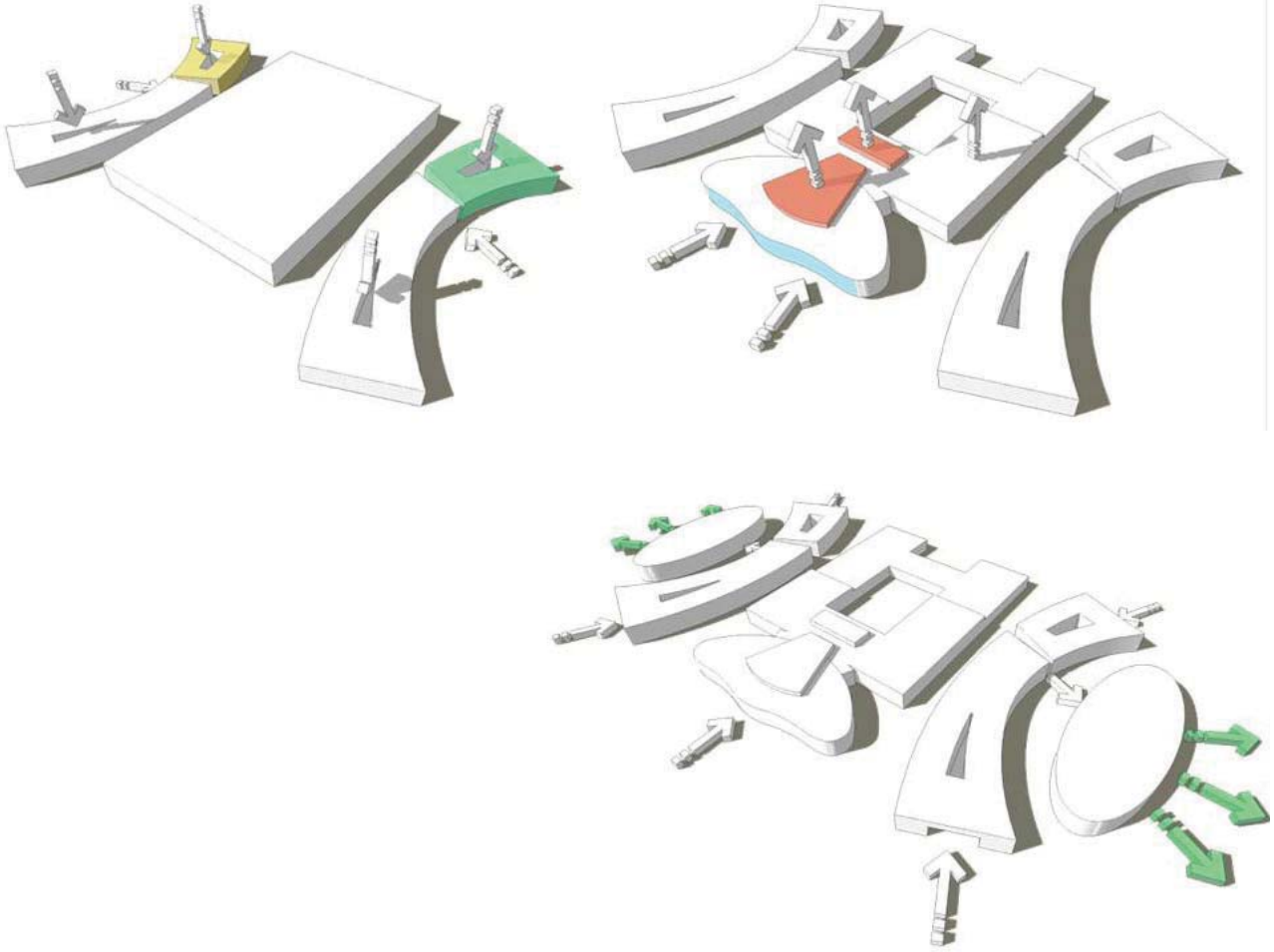
BUILDING PLANNING AND DESIGN:

A wide range of approaches is encouraged within Lusail City with the aim of creating a vibrant and varied environment, but of the highest quality.

The Lusail Development Control Regulations form the basis against which all designs will be reviewed. This includes Building Heights, Setbacks and Access requirements.

Additional specific requirements for all schools will be:

- Individual storeys should be a minimum of 4.0 m in height.
- A Building parapet of 1.2m (for safety and to screen roof-mounted plant) to be included in height dispensations.
- At grade and / or basement car parking to be provided in quantum to be in accordance with LREDC Standards.
- Building Facade Treatment - All buildings shall demonstrate a passive design strategy through an intelligent application of screens and/or shading devices on the building exterior that are responsive to solar orientation. Glazing ratios to be maximum 50%.
- Positive Frontage - Where possible, the front entrance to the school should face the principle highway or entrance it abuts. A balance should be struck between security for the school and its students and the desire for all Educational facilities at Lusail to feel ‘open’. Therefore boundary treatments need to be carefully considered to maintain a feeling of openness, particularly to the front of the plot, while maintaining privacy and security.



Lusail City Education Facilities Building Design Guidelines

ACCESSIBILITY

Access and inclusion for pupils with special educational needs and disabilities is required for all schools.

Minimum Requirements:

- The education facility shall be designed to accommodate students, staff, and visitors with physical disabilities and provide them with the opportunity to move freely within the school.
- Toilet rooms shall be designed to allow use by people with disabilities.
- Ramps shall be provided and shall meet International Building Code Requirements.
- Handrails and guardrails shall be provided at stairs and ramps and other changes in elevation.

ACCESS, PARKING, PICK-UP AND DROP-OFF

The points of access are defined in the approved masterplan for Lusail City. Points of access should be carefully integrated with the school plot designs to ensure that the development will be connected for pedestrians and cyclists, and vehicular access.

Schools at Lusail City will be required to develop a site design approach to parking, pick-up and drop-off that allows safe access to the school building without the need for pedestrians to cross traffic flow, and to avoid extreme travel distances from the parking lot to the school entrance. At no time shall the students be required to cross high vehicular traffic area. The following are requirements for parking, pick-up and drop-off:

Minimum Requirements:

- All parking lots and drives are required to be paved not gravel.
- Traffic signage to conform to local municipality requirements and the development regulations of Lusail City
- Accessible route, including handicapped parking spaces and wheelchair ramps shall be provided for those with physical disabilities, to all entrances.
- There shall be separation between bus traffic, and parent drop off for student safety and to avoid conflict between two types of traffic.
- Where more than one access to a site exists or is possible, the service drive shall be located away from main entry and staff/ visitor parking areas to avoid confusion and conflict in traffic flow.
- Traffic studies shall be conducted as required by the municipalities and traffic flow design shall meet those requirements.

SITE SECURITY

Learning activities require securable sites that feature controlled access for the protection of the students, staff and visitors. This requirement needs to be balanced against creating a facility that feels open, welcoming, non-institutional and part of the surrounding community.

Minimum Requirements:

- Enclosing walls and/or fences around school sites provide security for the entire campus, including play fields and green areas. Fences and/ or walls for boy's schools maybe of a more open design which could allow for views into the campus. Girl's schools must have a more opaque design that prohibits views to the recreational and sports areas of the school campus. Perimeter walls and fencing are required to be a minimum of 2.40 meters in height. It may be possible in many instances to provide open drop-off / public realm to the front of the school, while providing a fully enclosed series of buildings and external spaces to the rear. This increases the sense that the school is open and integrated into the community.
- When possible, walls and fencing shall be integrated into architectural designs to enhance and compliment the characteristics of buildings that occupy the campus. Designers are encouraged to find interesting textures, colors and shapes for perimeter walls. Perimeter walls shall not block views to the entrance of the school and to the access to community facilities.
- Gates at access points for the loading dock area for kitchens and heavy equipment should have the shortest possible distance to public streets. Gates shall open the full width of the access drives and be the height of the adjacent perimeter walls. Service entries shall be away from main entrances provided for students and communities.
- Building façades shall to be designed and integrated visually with the boundary wall and landscape.
- Specially marked entry locations into community use spaces shall be provided.
- Clear and safe routes for community use spaces from public ways and from parking areas shall be provided. Lighting systems to connect school entrances, walkways, and parking areas for night use by the community shall be designed.
- A security guard booth with an accessible private toilet room shall be provided at the entries to sites that penetrate the perimeter walls near major parking zones. An integrated intercom system that connects the booths with the main campus building shall be provided.
- A well-defined shaded pedestrian path shall be established from the parking and drop off areas to the main entrance
- Visual supervision of the main entry from administrative areas, shall be provided.
- Schools that integrate different grade groups (Primary, Prep, Secondary) into a single campus shall where possible have separate entry ways for each stage group.
- School sites for more than 1500 students shall be considered as very exceptional and designs for these large campuses shall allow for multiple, smaller and distinct, entry areas for each within the school.
- Convenient access for emergency vehicles shall be provided to serve each part of the campus. Civil Defense and local regulations and requirements for entry access of emergency vehicles must be met.
- Blind spots that prohibit the ability of the staff to adequately supervise all areas of the site and within the school shall be avoided.

Lusail City Education Facilities Building Design Guidelines

LANDSCAPING & OUTDOOR AREAS

The landscape in which the school sits and the building's relationship to the external space is as critical as the building itself. It is possible to create well designed, shaded, useable external spaces that work with the Qatar climate.

The use of external play space is an important counter to the enclosed built space and it is important to have a variety of spaces. This should include gathering spaces for Recess, Play spaces, outdoor learning spaces and Playing Field / Sport provision appropriate to the curriculum.

Outdoor learning spaces should be wonderful social, recreational and educational spaces that can be used to teach about the environment, natural science, as well as be safe places in which to do research, and conduct experiments. Outdoor learning areas shall be designed as inviting places for students to read or conduct their study in a quiet setting. Even in tight urban sites school designs shall allow for an important contribution to city green areas.

The following should be considered in the design of the external environment:

- Student and Visitor Experience – Colour, Smell, Texture
- Incorporation of Nature – Plants, Wildlife
- Variety of Shading – Planting canopies, shading structures, use of the building.
- External Learning – Landscape spaces as a Teaching Aid
- Level Changes – These can add variety, define space and provide opportunity for seating areas etc.
  All spaces should be fully accessible for all students, staff and visitors.

Minimum Requirements:

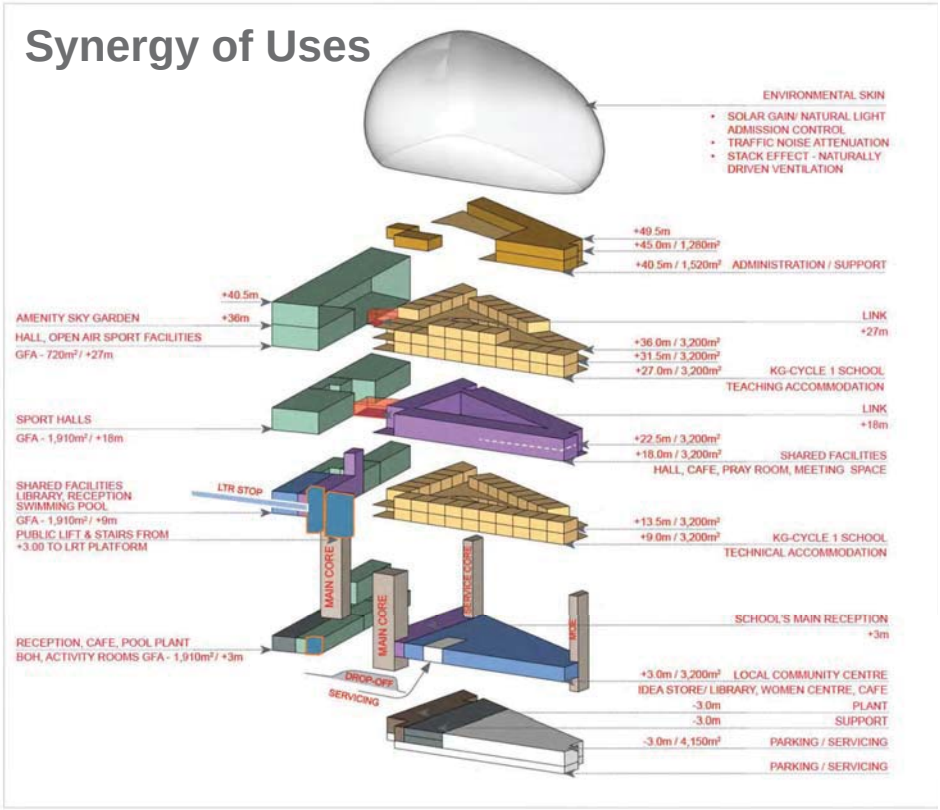
- Outdoor learning areas that are appropriately shaded (50% of external areas excluding playing fields)
- Designs that do not create excessively long narrow spaces between buildings and the perimeter walls or fences.
- Outdoor spaces should provide at least 10 meters clear distance between buildings and perimeter walls and fences, while limiting the length of such spaces to no longer than 30 meters in any straight parallel situation.
- Should provide clear delineation of the main entry to the school which should be emphasized with architectural and decorative elements like murals, sculptures and water fountains, as well as shade and protect from the weather.
- Physical education areas shall include playing field for exercise and sports practice.
- Outdoor shaded learning space of 20 m2 per grade level is considered appropriate.
- Main academic areas shall be situated on areas of the site that offer the most privacy for students and teachers.
- Drop off and parking areas shall be out of the perimeter walls as long as they are within the school limits.
- Landscape design should enhance the visual quality of school campus while improving the microclimate and offering learning opportunities
- Change of levels that do not offer protection from falls by school users shall not be allowed. Adequate railing systems will be provided wherever necessary changes in elevation occur.

HIGH DENSITY SITES

In certain higher-density districts of Lusail City, an innovative approach to school design will be encouraged. The key criteria in consideration of such school design will be the demonstration that Students studying in high density urban areas can and will be provided with the same quality school facilities as all other students. These schools shall still meet requirements and standards as stated in this Design Manual. However, certain special adjustments may be made for secondary level schools, as follows:

- Height increase to ground plus three for 6-12 grade schools.
- Minimum plot size may be reduced if the following criteria are met:
- Underground, or off-site parking provision with an approved travel plan.
- Rooftop sport and recreation facilities that are safe and do not interfere with mechanical or other equipment.
- Outdoor sporting areas provided off-site. However, these fields must be within close proximity to the school and procedures must be in place to ensure student safety. These facilities may be shared with the community as public parks, stadiums, community pools, etc. It is the responsibility of the education provider to ensure a contract is in place with the relevant authority to share community facilities for a long-term.
- If the height of the school exceeds ground plus two stories, the internal vertical circulation must be sufficient so as a class of 30 students plus a teacher can move as a group to any floor, safely.

HIGH DENSITY SCHOOL TYPOLOGIES
SB-10: KINDERGARTEN + CYCLE 1 SCHOOL



Lusail City Education Facilities Building Design Guidelines

TECHNICAL STANDARDS

Lighting

The ability to use natural daylight in a school can be directly related to how well students learn. Important principles to consider are:

- Day lighting Balance – Natural Light v Solar Gain
- Quality –Natural Light vs. Artificial
- View – Windows only give light but should be used to frame views
- Connectivity – Changes of Weather Transmitted through roof lights and windows.

Minimum Requirements:

- All instructional spaces (with the exception of assembly spaces and similar dedicated purpose instructional spaces) shall have a minimum of 5% of gross floor area as window glazing to provide daylighting.
- Natural light shall be comfortable and glare free and supplemented as necessary with electric lighting to satisfy educational requirements during day and night hours.
- Light should be evenly distributed throughout walls, teaching surfaces and desk levels.

Thermal comfort and indoor air quality

If students are uncomfortable, their concentration is lost. This affects their learning.

Comfortable environments = Comfortable Children = Positive Learning

Ventilation – Mechanical ventilation will be required in combination with the buildings AC system but natural ventilation with fresh air should be considered for cooler months in some spaces within the school.

Climate – The Qatar climate is challenging and the schools should be designed to be appropriate for the climate. Exemplar educational designs from other geographies therefore need to be considered carefully before introduction to Lusail.
Shade – Reduced heat build-up equates to reduced cooling loads which in turn should deliver energy savings. Shading, of both internal and external spaces, is also an important part of the occupant's comfort.

Recycle – Re-use of the building's Own Energy for cooling and other bi-products should be considered.

The building's HVAC system must be designed, installed, and operated to enhance the learning and the teaching by eliminating "thermal distractions" for teacher and student alike. The effective design for thermal comfort must confront and control three vital indicators of a healthy educational environment: temperature, humidity, and ventilation.

Minimum Requirements:

- Temperature: Design conditions for space temperatures shall be as follows: Summer: 22 to 24 degrees C
- Humidity: Design conditions for the range of temperatures listed above shall be 40 to 60% relative humidity.
- Ventilation levels shall be at least: 0.60 L/s per m2 for fresh air and 4 changes per hour for exhaust. Provide at least one operable window in each room to provide natural ventilation.
- Swimming pools require a speciality design for the HVAC system to provide humidity control and to minimize evaporation. Air temperatures in pool area should be maintained 1 to 2 C above the water temperatures year round. Relative humidity in the pool area should be maintained at 50 to 60%. Water temperatures for recreational pools are 24 to 29 degrees C.

ACOUSTICS

The correct acoustic performance of learning environments is critical for effective teaching. Various spaces within the building should be treated differently to form reverberant yet comfortable spaces, differentiated as follows:

- General Areas – Teaching Classrooms, Breakout Areas
- Circulation – many people at one time
- Specialist Areas – Auditorium, Music Rooms, Dining
- External Noise – External Environment
- Furniture - Form zones/ add to acoustic absorption

Minimum Requirements:

Low Sound Transmission Class (STC) between walls, floors, doors, and window of educational study not exceed 50dB shall to avoid disruption of teaching and learning. Acoustic treatment shall be provided to avoid echo and long reverberation times in instructional all spaces.

INFORMATION AND COMMUNICATION TECHNOLOGY

The growth of use of ICT in the classroom has been rapid and the need to embrace technology to assist student and teachers in the learning environment is vital. Over the life of the school it is certain that technology will change considerably and therefore it is important to consider integration that is:

- Invisible - seamlessly blended into the fabric
- Flexible – future proofing
- Mobile – Non Restrictive
- Engaging – e.g. Interactive Walls

School buildings shall be equipped to allow for computer technology and internet access in every educational and administrative space, and a central server shall be placed in a room not accessible to students and close to the administration area.

Lusail City Education Facilities Building Design Guidelines

SUSTAINABILITY/GSAS

Lusail are promoting the design and construction of sustainable schools in order to make a significant and positive impact on student health, school operational costs and the environment. The schools are intended to showcase Lusail City's commitment to its children and their future, which in turn learn from an early age the importance and benefits of acting as responsible stewards of their communities.

Lusail requirement is for each school to achieve a 4* rating under the GSAS building rating system. The GSGS rating system is made up of both mandatory credits and voluntary credits, and it is therefore up to the schools owner and their professional team to decide how they wish to achieve the rating.

This document therefore does not seek to repeat the standards required by GSAS, but however to highlight the specific considerations relevant to energy conservation and sustainable design in schools. Such considerations include, but are not limited to:

- Schools designed to be energy efficient, helping to lower utility costs, conserve resources and reduce waste.
- Promote well-being and exercise;
- Enhance the quality of work and living environments;
- Sustainability incorporated as an integral component of the campus;
- Reduce the resource use through efficient energy
- Reduce water consumption and encourage water conservation through efficient landscape irrigation, potable and non-potable building water uses and cleaning practices;
- Reduce emissions of pollutants and toxins;
- Purchase and use materials and products that conform to sustainable requirements;
- Raise environmental and sustainability awareness among those who study and work in and around campus facilities
- Encourage waste minimization and recycling in both construction and operational purposes.

Responsible, Passive Design

Emphasis should be placed on reducing energy demand through passive environmental design measures such as orientation and shading, as well as the selection of efficient mechanical and electrical systems.

Maximising the opportunity offered by the site

Through analysis and assessment of all natural features on a site, conservation of existing significant or valuable natural assets is encouraged through protection or mitigation. Where no notable attributes are present, Ecological enhancement of the sites are encouraged through an emerging landscape design that promotes native and adaptive species where appropriate on the school site.

A school provides an opportunity to show not only how a building uses energy, but how energy-saving devices can be showcased. Sustainable principles can become 'visible' or 'living' part of the schools architecture, landscape and interior design.

External Environment

Good practice suggests the provision of a compact school in which student movement is promoted within the design, with shaded walkable connections, to encourage well-being and natural exercise for students and teachers areas where these measures shall be considered include but are not limited to Accessibility, Outdoor Thermal Comfort and Lighting.

Given the local climate of Lusail City, it is necessary to improve comfort for students when using the outside spaces during play time and between classes. Therefore, building integrated and standalone shading should be introduced into the design along walkways and over play areas.

Internal Environment

Children are inherently more vulnerable to environmental hazards because their bodies are still developing. Therefore it is important to design and build a school that has excellent levels of indoor air quality. Growing evidence suggests that improving outdoor air ventilation rates can improve student and teacher performance, increase test scores, and reduce airborne transmission of infection. In one study, students in classrooms with higher outdoor air ventilation rates scored 14 to 15 percent higher on standardized test scores than children in classrooms with lower outdoor air ventilation rates. (Source: http://www.epa.gov/iaq/schools/pdfs/student_performance_findings.pdf). Areas where these measures shall be considered include but are not limited to:

- Ventilation and Air Quality
- Material Emissions
- Thermal Comfort
- Lighting
- Daylighting
- Noise.

Air Quality

The MEP systems should be designed to protect the quality of air drawn into buildings for ventilation and to ensure minimum delivery of outdoor fresh air. In addition, permanent carbon dioxide (CO2) monitoring and alert systems should be installed to ensure the adequate provision of outside air at all times. There are to be no designated smoking areas as smoking will be prohibited on the school's grounds. No smoking signage on boundary wall should highlight this.

Selection and Specification of Materials
The selection of material types should consider the sustainability of the materials themselves and also the volume of waste likely to be produced as a result of the use of the material type, pollution risks and; effects on community in terms of heat island effect. Areas where these measures shall be considered include but are not limited to Construction, Demolition and Operational Waste Reduction and Reused or Certified Timber.

The use of products with a low Volatile Organic Compounds (VOCs) can help result in a healthier indoor environment. These low VOC can help improve a classroom's indoor air quality and reduce students' and teachers' risk of chemical exposure.

The elimination of hazardous materials is especially important for a school environment. The school designs should include a selection of materials that do not have long-term negative impacts on human health or pollute natural systems. Materials containing asbestos or chromate copper arsenic will be prohibited due to their carcinogenic properties. Similarly only insulation with zero ozone depletion properties and low global warming potential will be allowed, due to their low pollution levels.

Water Conservation
The scarcity of water within Qatar and the energy and environmental costs embedded in the production of desalinated water and treated sewage effluent make water a commodity to be conserved where at all possible. The efficient use of this vital resource is an essential component in the sustainable design of any school.

Water conservation measures shall be employed throughout the school campus. Areas where these measures shall be considered include but are not limited to:

- Efficient fixtures and fittings.
- Landscaping
- Metering/Monitoring

Interior Water Use Reduction
In the main, the major uses of water inside a school are kitchens and toilet flushing. Such strategies to optimise and reduce use relate to specification of efficient fixtures and fittings such as low flow taps and single flush toilets which use only 3 litres of water per flush. Such fittings are available within the local market through a number of suppliers.

Exterior Water Use Reduction
Irrigation can be a large consumer of water in schools. Water efficient designs should be implemented through the incorporation of only native and adaptive species as well as a turf substitute for playing fields where possible. In addition, a smart irrigation system should be specified. The target should be that irrigation requirements will be less than 2 litres per m2 of landscape area.

Metering and Monitoring
Metering and monitoring as well as leak detection systems should be incorporated into the design. This will help ensure effective management of both internal and outdoor water consumption and the early detection and even prevention of leaks.