



لجنة تطوير المساجد
mosque development committee



Abu Dhabi Mosque Development Regulations
Volume 1

Planning



Summary of Mandate

In 2008, His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi, Deputy Supreme Commander of the UAE Armed Forces and Chairman of the Abu Dhabi Executive Council, mandated the formation of the Abu Dhabi Mosque Development Committee. Its purpose is to deliver upon the vision of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE and Ruler of Abu Dhabi, for the continued fulfilment of the grand design envisaged by the late Sheikh Zayed bin Sultan Al Nahyan, Father of the Nation, and the ongoing evolution of the Emirate of Abu Dhabi.

The Mosque Development Committee (MDC) is responsible for preparing a strategy to direct the development of mosques in the Emirate. Its objectives include optimising the distribution of mosques and enhancing their role within communities, encouraging design innovation while preserving Emirati architectural heritage and ensuring that mosques are built, operated and maintained to the highest international standards.

Accordingly, the MDC has completed the following:

- A comprehensive Emirate-wide survey and conditions assessment of all existing mosques to identify those which may be replaced to regulate distribution and capacity based on population density;
- A web-enabled application processing tool that identifies gaps in supply and demand to determine the optimum location of future mosques;
- An Emirate-wide cleaning and maintenance programme that ensures all mosques are serviced to the highest international standards for public buildings;
- An Emirate-wide programme that enables all mosques, including those that are privately owned, to be managed and operated by the General Authority of Islamic Affairs and Endowments (Awqaf);
- An Emirate-wide programme that enables all temporary mosques to be replaced with new permanent ones where required; and
- An Emirate-wide regulatory framework that addresses the planning, design, construction, operations and maintenance of each mosque to ensure best practice standards are applied during its complete life cycle.

As such, the MDC is pleased to issue the Abu Dhabi Mosque Development Regulations, a regulatory framework that will safeguard the development of mosques well into the future.

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I. Introduction

The Abu Dhabi Mosque Development Regulations (ADMDR), referred to here onwards as the Regulations, establishes standards for the distribution, design and operational management of permanent mosques in the Emirate of Abu Dhabi (refer to Figure 1). All proposals for mosques in the Emirate will be prepared and assessed using the Regulations.

The Regulations comprise the following documents, as referenced in Figure 2:

1. User Guide

2. Regulatory Volumes

- Volume 1 – Planning
- Volume 2 – Design
- Volume 3 – Operations

3. Appendices

- Appendix 1 – Estidama
- Appendix 2 – Architectural Prototypes
- Appendix 3 – Vernacular Study



Figure 1: Geographical jurisdiction of Abu Dhabi Emirate

Estidama

‘Estidama’, which means sustainability in Arabic, is Abu Dhabi Government’s programme of sustainability. As part of Estidama, the Abu Dhabi Urban Planning Council (UPC) has developed the Estidama Pearl Rating System (PRS).



The PRS is a comprehensive framework for the sustainable design, construction and operation of communities, buildings and villas that supports the social and cultural traditions and values of the Emirate.

The ADMDR specify that all mosques shall achieve a the minimum required Pearl Rating as per Information Bulletin #15. In order to do this, the design of a mosque must:

- Meet all 20 mandatory Pearl Building Rating System (PBRs) required Credits; and
- Where applicable, meet a combination of PBRs Credits that will achieve a minimum of an additional 60 Credit Points.

A PBRs Credit is a specific sustainability item or set of items from which Credit Points are obtained. The number of Credit Points obtained can vary from Credit to Credit. For example, SM-10 is a Credit relating to recycled material that offers 6 Credit Points, whereas SM-12 is a Credit relating to re-used or certified timber that offers 2 Credit Points.

In this volume, the Estidama logo appears next to the relevant policies, standards and guidelines to inform the user of Credit opportunities and requirements. For more information, refer to Attachment A of this document and Appendix 1 – Estidama*.

* Standards and guidelines related to optional credits are not applicable to mosques required to comply with a minimum 1 Pearl Rating.

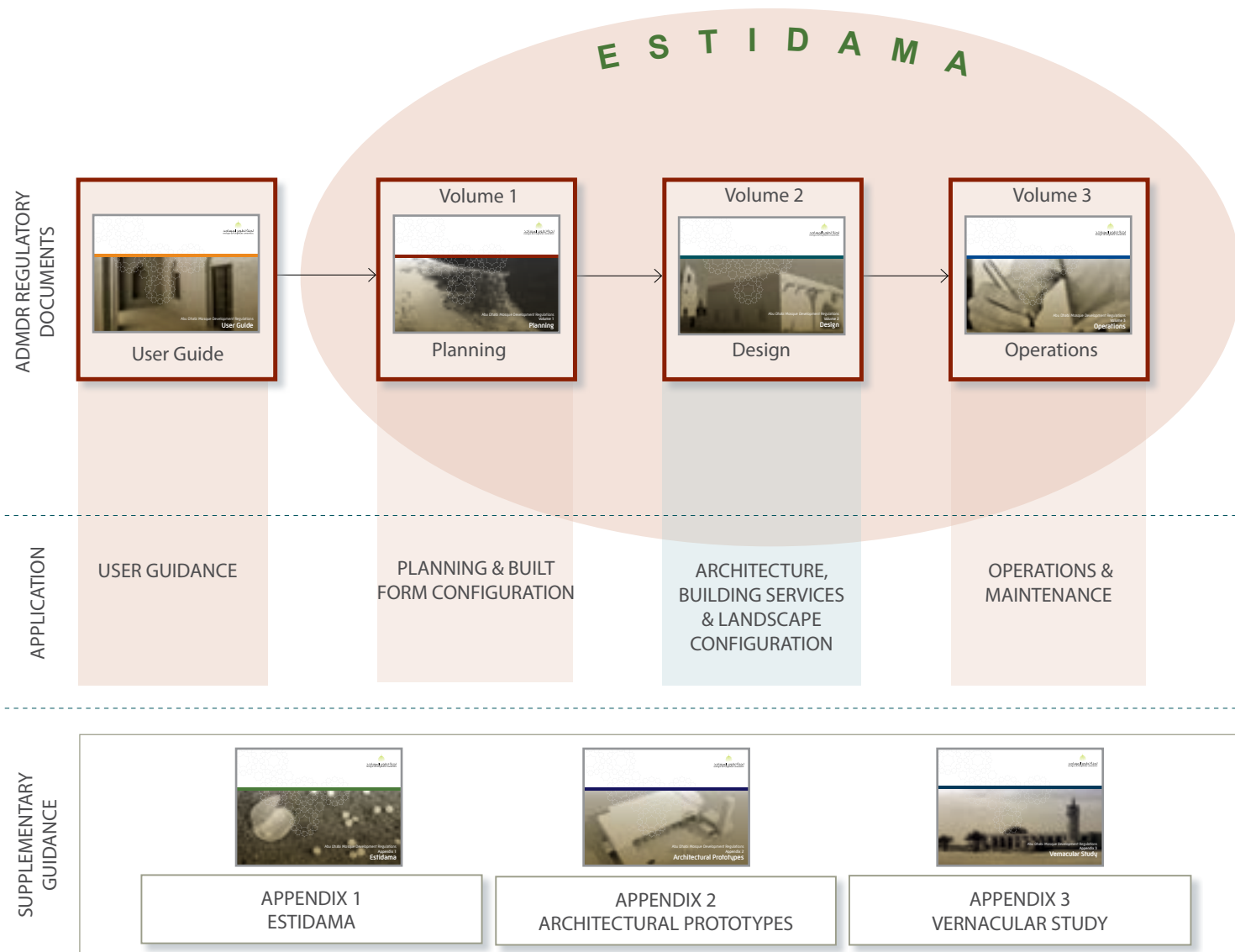


Figure 2: Abu Dhabi Mosque Development Regulations documents and application

II. Targeted Users

The Regulations in this volume, Volume 1 – Planning, have been designed for the following user groups:

- Master Developers;
- Municipalities (Urban Planning);
- Abu Dhabi Urban Planning Council (UPC);
- Estidama Assessors; and
- Estidama Pearl Qualified Professionals (PQPs).

III. Regulatory Language

Throughout this volume, there are methodologies, planning standards (referred to as PS1, PS2, PS3, etc.) and planning guidelines (referred to as PG1, PG2, PG3, etc.) that have been established in order to ensure the provision of mosques meets the requirements of the community.

The methodologies are mandatory and must be used to ensure consistency across the Emirate when assessing the provision of mosques.

The prescriptive elements in the standards and guidelines in this volume are defined using the following language:

- SHALL and SHALL NOT are mandatory statements;
- SHOULD and SHOULD NOT are recommended statements; and
- MAY is a permitted statement.

IV. Document Structure

This volume takes the user through a step-by-step process of calculations and assessments, in line with the Regulations, in order to determine the optimal distribution of mosques within a defined area. It includes:

The settlement context, as defined by the UPC, is categorised as:

- Highly Urban;
- Urban;
- Suburban; and
- Rural.

Built form standards and guidelines governing:

- Plot area;
- Minimum gross floor area (GFA);
- Plot coverage;
- Building height; and
- Parking requirements.

Land use standards and guidelines governing:

- Plot location;
- Site suitability;
- Accessibility; and
- Land use compatibility.

V. Application

Any area that has a residential component and/or any industrial area must comply with the Regulations regarding the provision of mosques. The planning process presented in this volume is used to identify plots for mosques under the following scenarios:

1. Infill development, including:

- The development of mosques within existing urban areas; and
- The redevelopment or refurbishment of an existing mosque which will result in an increase in capacity.

2. Area plan and master plan developments, including:

- Development of mosques within newly planned areas where a hierarchical distribution of mosques can be established.

In non-residential buildings (hotels, offices, shopping centres, sports and cultural buildings, etc.), musallas (prayer rooms) will be required within the built form of the building. A musalla will not replace the requirement for a mosque in an Overall Site Area or Site Area (refer to Figure 3), but will provide additional prayer facilities over and above the provision of all required mosques.

In rural areas, the requirements for the allocation of a plot for a mosque will be determined by Awqaf, DMA and the UPC. In this case, the land use calculations and assessments in this volume may be used to inform decision-making.

VI. Site Hierarchy

Three terms are consistently referred to throughout this volume to establish a hierarchy of areas that are used to determine the distribution of mosques:

- Overall Site Area: the largest of areas used for calculating the number of mosques required, and contains the population that the mosque(s) will serve. The boundaries of an Overall Site Area would likely be made up of major roads, natural boundaries, open space, etc. In a master plan or area plan, the site boundaries would define the extent of the total area to be developed.
- Site Area: a subset of the Overall Site Area. An Overall Site Area may be divided up into a number of Site Areas based on clearly defined physical boundaries or a change in urban form. A Site Area should represent a predominant settlement context and/or a defined population to allow the maximum efficiency for mosque distribution within the Site Area.
- Plot: an individual piece of land within a Site Area that a mosque will be located on.




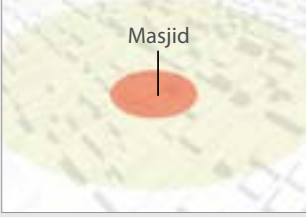

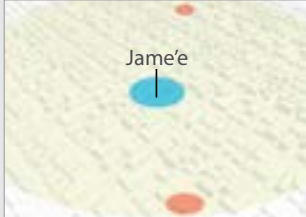
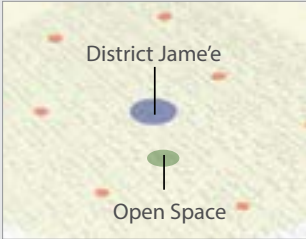
Figure 3: Example of site hierarchy

VII. Mosque Hierarchy

There are three types of mosque as defined in the Regulations. Each type has a specific role and, as a result, requires varying degrees of facilities and supporting infrastructure.

The locational, built form and land use standards used in this volume are based on the mosque hierarchy (refer to Table 1: Mosque Hierarchy.)

Table 1: Mosque Hierarchy

Mosque Typology	Catchment Served	Characteristics	Catchment Area
Masjid (daily mosque)	<p>Serves a single catchment within a Site Area.</p> <p>Centrally located in a catchment and typically within walking distance.</p> 	<p>Serves all daily prayer times.</p> <p>Required to accommodate a smaller worshipper population within the Site Area compared to other mosques.</p>	
Jame'e (Friday mosque)	<p>Serves multiple catchments within a Site Area.</p> <p>Typically located along a transit route to provide better access.</p> 	<p>Serves all daily prayer times and Friday prayers.</p> <p>Required to serve a larger worshipper population than a masjid in order to accommodate the number of worshippers from multiple catchment areas who will attend Friday prayers.</p>	
District Jame'e (Eid mosque)	<p>The minimum catchment area served is similar to a jame'e.</p> <p>Adjacent to an open space to accommodate Eid prayers.</p>	<p>Serves daily, Friday and Eid prayers.</p> <p>Abuts an open space along the entrance boundary in order to accommodate an increased worshipper population during Eid prayers.</p> <p>District jame'e mosques may be designated for 'Community and Emergency Support', in the event of natural disasters and emergencies, by the local emergency planning authority.</p>	

VIII. Outline of the Mosque Planning Process

The mosque planning process guides the user through a sequence of stages with the objective of identifying plots that achieve maximum efficiency in the distribution, capacity and/or typology of mosques.

The planning process in this volume is structured into three stages:

1. Review the planning policies and principles.

- 2. Calculate the demand, supply and capacity requirements.
- 3. Assess plots against best practice land use planning.

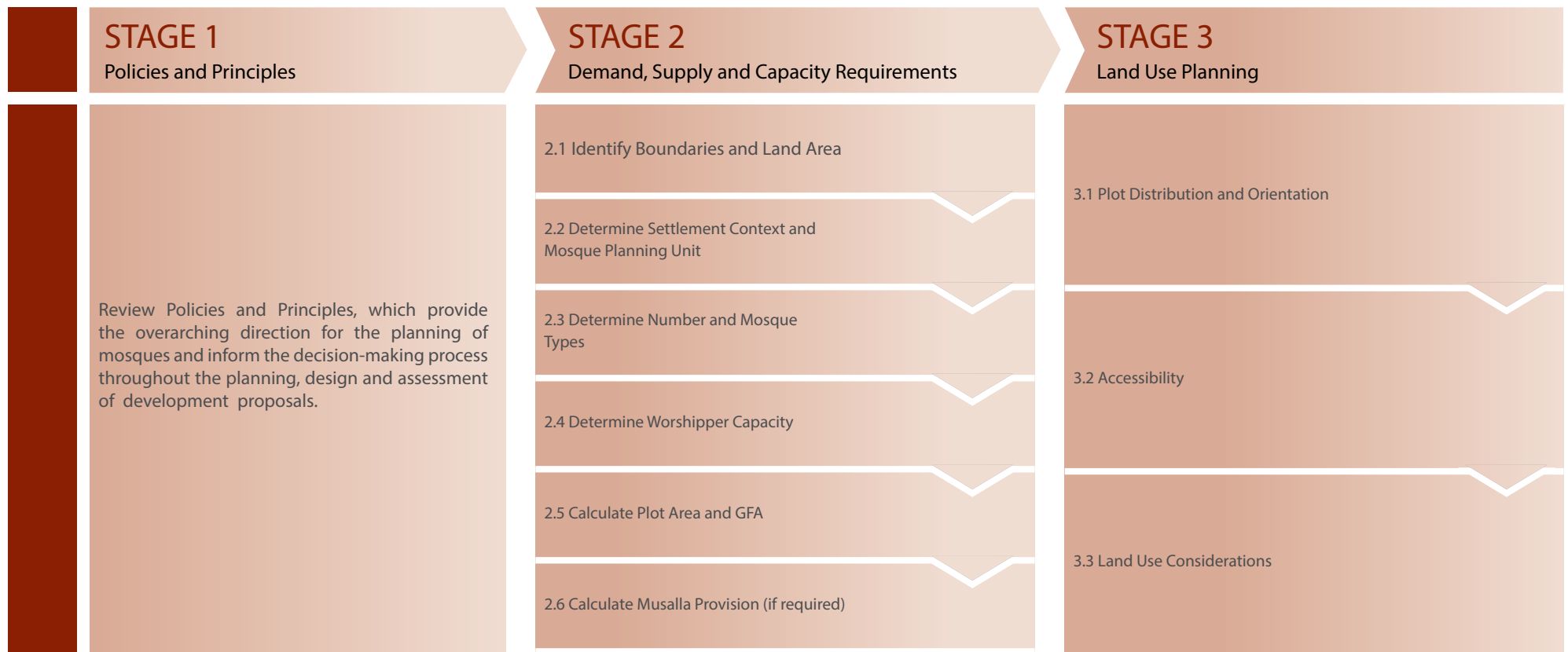


Figure 3: Mosque planning process

STAGE 1

Policies and Principles

1.0 Policies and Principles

The Policies and Principles provide the overarching direction for the planning of mosques and inform the decision-making process throughout the planning and assessment of development proposals.

Methodology

At project inception, review the Planning Policies and Principles to ensure that the intent is considered throughout the planning process and reflected in the final outcome.

1.1 Provision Policy

Sufficient mosques are to be provided to ensure there is appropriate provision for all worshippers regardless of location and settlement context.

Principle 1.1a All worshippers are to be accommodated within the mosque, even at peak prayer times.

Principle 1.1b Musallas are to be a supplement to full mosque provision.

1.2 Location Policy

Mosques are to be placed in prominent, localised places that promote and reinforce the important religious and social roles they play in their respective communities.

Principle 1.2a Mosques are to be the primary place of worship within communities, and this role should not be diminished or reduced by inappropriate development proposals.

Principle 1.2b Mosques are to be located to ensure appropriate access, which reinforces their role within communities.

1.3 Access Policy

Mosques are to be planned with safe and comfortable access for pedestrians (first) and vehicles (second).

Principle 1.3a Mosques are to be located to ensure they are easily accessible by worshippers travelling on foot or by public transport.

Principle 1.3b Pedestrian access is to be made safe and comfortable with non-obstructive shadeways.

Principle 1.3c Entrances for worshippers are to be placed prominently along public streets.

1.4 Wider Community Policy

Mosques are to be holistically integrated within the wider community.

- | | |
|----------------|--|
| Principle 1.4a | Mosques are to provide space for visiting worshippers. |
| Principle 1.4b | Mosques are to provide opportunities for community support facilities, such as crèches and Qur'anic education, and spaces for community interaction. |
| Principle 1.4c | Mosques are to be designed to integrate with the connections to the surrounding public realm. |
| Principle 1.4d | Mosques are to be planned to create activity centres and places of social interaction through co-location with other community facilities. |

1.5 Gender Equality and Inclusivity Policy

All mosques are to be designed to ensure there is appropriate provision for all user groups.

- | | |
|----------------|---|
| Principle 1.5a | Appropriate space is to be provided to accommodate the requirements of male and female worshippers. |
| Principle 1.5b | Comfortable prayer spaces, ancillary facilities and recognisable access points are to be provided to accommodate the requirements of the elderly and mobility impaired. |
| Principle 1.5c | Mosque entrances are to be designed so that they are easily recognisable and accessible. |

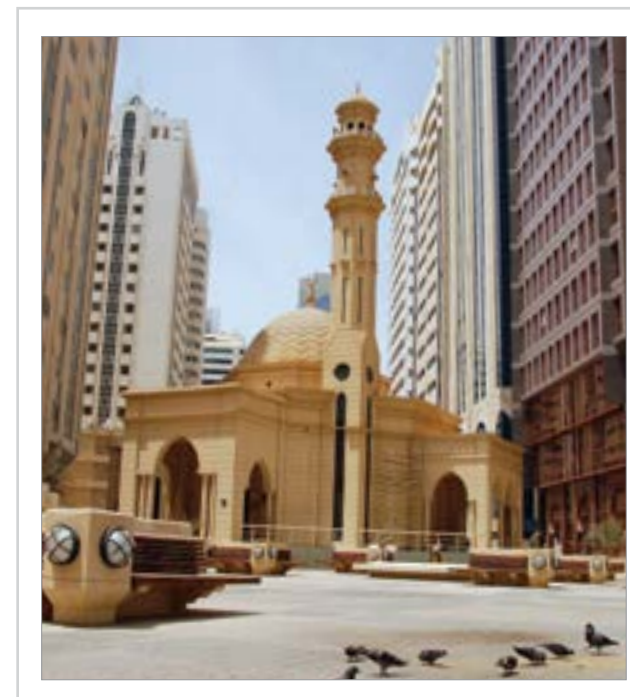


Figure 5: Example of a mosque in a Highly Urban settlement context within the Abu Dhabi City Municipality boundary

STAGE 2

Demand, Supply and Capacity Requirements


2.0 Demand, Supply and Capacity Requirements

This stage provides the step-by-step process for determining the number, type and size of mosques required within an Overall Site Area or Site Area.

Table 2: Summary of Mosque Metrics includes all of the standards required to make the relevant calculations for the planning of mosques.

The process presented in this section describes in detail how each calculation is made and presents a case study to illustrate how each step is applied. A sample Mosque Planning Summary Sheet containing all of the information that has been calculated as a result of applying the case study is provided in Attachment B.

Table 2: Summary of Mosque Metrics

Settlement Context	Mosque Type	Mosque Catchment 			Plot/Built Form Matrix					Supporting Standards	
		Mosque Planning Unit	Catchment Distance	Min Distance Between Mosques	Min Plot Area Ratio (sqm per worshipper) ¹	Min GFA Ratio (sqm per worshipper) ²	Imam's Residence (additional GFA)	Mu'athen's Residence (additional GFA)	Max Plot Coverage	Min Open Space/Car Parking Coverage ¹	Max Building Height ³
		(MPU/SMPU)	(CD)	(MD)	(PAr)	(GFAr)	(IR)	(MR)	(PC)	(OS)	(BH)
Highly Urban	Jame'e	9.5 ha	175 m	340 m	1.8	1.8	100	80	70%	30%	G+2+ basement ⁴
Urban	Jame'e	38.5 ha	350 m	340 m	1.8	1.8	100	80	70%	30%	G+2+ basement ⁴
	District Jame'e				1.9	2					
Suburban	Masjid	38.5 ha	350 m	340 m	4.4	1.8	100	Not required	60%	40%	G
	Jame'e	154 ha (SMPU)	700 m	680 m	3.5			80			G+1
	District Jame'e				3.7	2		G+2			
Rural	Masjid	To be determined by the relevant authority.			4.4	1.8	100	Not required	60%	40%	G
	Jame'e	5.6	80	50%	50%			G+1			

1 – Excludes total parking requirements (refer to PG18).

2 – Excludes Imam's and Mu'athen's residences.

3 – Refer to Figure 6.

4 – Basement not to be used for parking (refer to PS26 and PS27).

Outcome

Prepare a Mosque Planning Summary Sheet of all calculations that have been completed for the Overall Site Area or Site Areas based on Attachment B.

Table 2 (continued): Summary of Mosque Metrics

Settlement Context	Mosque Type	Parking		
		Vehicle Parking Space Requirements ⁵	Vehicle Parking Area Allocation ⁶	Bicycle Parking Requirements
		(VPS)	(VPA)	(BP)
Highly Urban	Jame'è	1 parking space per 30 worshippers, or 1 space per 45 sqm of GFA ⁷	30 sqm	A minimum of 5 bicycle stands for mosques with a capacity of 500 worshippers or less, or a minimum of 10 bicycle stands for mosques with a capacity of over 500 worshippers. Ensure each bicycle stand is at least 2 m x 0.75 m
Urban	Jame'è			
	District Jame'è			
Suburban	Masjid	1 parking space per 15 worshippers ⁷	35 sqm	
	Jame'è			
	District Jame'è			
Rural	Masjid			
	Jame'è			

5 – Based on DoT Standards at time 1 of publication.

6 – Inclusive of sqm for parking spaces and circulation. Does not apply to on-street parking.

7 – For Imam, Mu'athen and disabled parking, refer to PS23 and PS24.



Figure 6: Maximum building height

2.1 Identify Boundaries and Land Area

This process determines whether the Overall Site Area (master plan or area plan) will be treated uniformly or if it will be sub-divided into Site Areas as a result of:

- Physical boundaries, such as boulevards (3+3), avenues (2+2) (As defined in the Abu Dhabi Urban Street Design Manual (USDMM)) and parks, that increase walking time and/or prevent safe and convenient pedestrian access to a mosque;
- Boundaries created where there is a clear distinction between population density as a result of built urban form; or
- A combination of the two.



Figure 7: Boundary of the Site Area

CASE STUDY NOTES:

- The selected Site Area is a portion of an Overall Site Area.
- The boundaries of the Site Area are defined by avenues along each of the 4 sides of the Site Area.
- Site Area = 219 ha.

Methodology

- i. Identify and define the boundaries of the Overall Site Area and calculate the area.
- ii. Identify any physical or urban form boundaries that will determine the boundaries of Site Areas within the Overall Site Area, as follows:
 - Physical boundaries may include boulevards and avenues (as defined in the Abu Dhabi Urban Street Design Manual), parks and open spaces, waterways, transportation corridors, utility corridors and inaccessible, privately owned or non-residential land that creates a barrier that increases the distance and subsequent walking time to a mosque.
- Built urban form boundaries may be defined based on a transition between differing population densities. A boundary between low-density residential villas and medium- or high-density apartments may be clearly apparent.
- iii. Calculate the area (in hectares) of each Site Area.
- iv. Ensure the total sum of the land area of all Site Areas is equal to or less than the area of the Overall Site Area.
- v. Ensure the sum of the population of all Site Areas is equal to the population of the Overall Site Area.

Outcome

- The boundaries for the Overall Site Area or each Site Area will be clearly defined.
- The corresponding land area(s), in hectares for the Overall Site Area and/or Site Areas will be calculated.

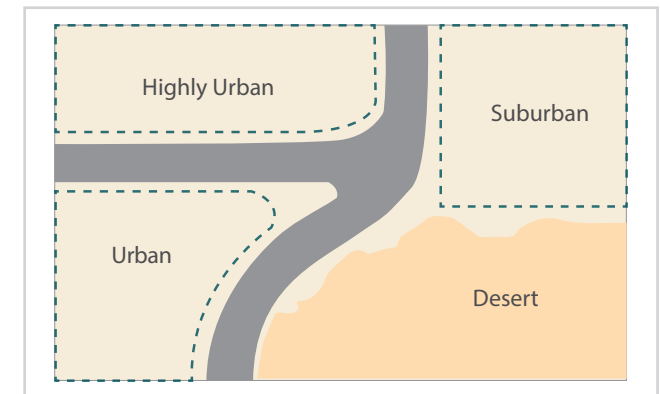


Figure 8: Site Area boundaries

Standards		Guidelines	
PS1	If an Overall Site Area is sub-divided into Site Areas, the combined sum of the area (in hectares) of each Site Area SHALL be equal to or less than the Overall Site Area.	PG1	The Overall Site Area MAY be divided into smaller Site Areas due to physical boundaries and/or differing population densities, if the boundaries can be clearly defined.
PS2	If an Overall Site Area is sub-divided into Site Areas, the combined sum of the population of each Site Area SHALL be equal to the population of the Overall Site Area.		

2.2 Determine Settlement Context and Mosque Planning Unit


As defined by the UPC, there are four categories of settlement context:


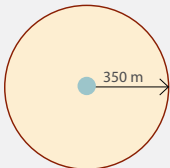
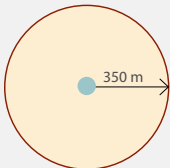
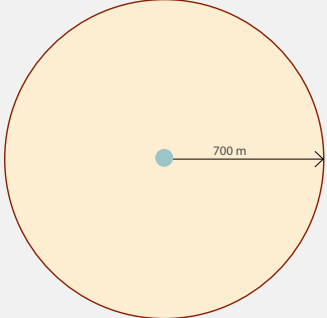
- Highly Urban;
- Urban;
- Suburban; and
- Rural.

The settlement context provides an indication of the population density and urban development patterns in a Site Area, which will influence the number, type and built form of mosques that will be required. An industrial area represents a special case with regards to the settlement context and minimum distance between mosques (refer to PS6).

Once the settlement context has been identified, it will be used to determine the Mosque Planning Unit (MPU). The MPU indicates the geographical catchment area, in hectares, that a mosque serves. It is derived from the defined maximum walking distance to a mosque (catchment distance). The MPU is used to calculate the number of mosques required within an Overall Site Area or each Site Area (refer to Table 3).

A Secondary Mosque Planning Unit (SMPU) is used in a Suburban settlement context, where population densities are generally lower, to calculate the number of jame'e mosques that will be required. This calculation is required to ensure there is an efficient distribution of masjid and jame'e mosques.

Table 3: Mosque Planning Unit Catchment Area 

Settlement Context	Catchment Distance	MPU	Catchment
Highly Urban	175 m	9.5 ha	
Urban	350 m	38.5 ha	
Suburban	350 m	38.5 ha	
	700 m	154 ha (SMPU)	
Rural	To be determined by Awqaf, the DMA or the UPC.		

CASE STUDY NOTES:

The case study used represents a Suburban settlement context

- MPU of 38.5 ha will be used:
- Equivalent catchment distance = 350 m
- SMPU of 154 ha will also be used:
Equivalent catchment distance = 700 m

Methodology

- i. The UPC will determine the settlement context. Refer to the Abu Dhabi Community Facility Planning Standards (CFPS) for the methodology used to determine the settlement context.
- ii. Use the settlement context for the Overall Site Area or each Site Area (determined in the previous section) to determine the corresponding MPU that applies.
- iii. For an Overall Site Area or each Site Area that has a Suburban settlement context only, the SMPU will be used to calculate the number of jame'e mosques that will be required. (Refer to Table 2 to determine the applicable MPU and SMPU that will apply.)

Outcome

- The settlement context for the Overall Site Area or each Site Area will be determined.
- The Mosque Planning Unit required for the Overall Site Area or each Site Area will be determined.

Standards		Guidelines	
PS3	If an Overall Site Area has multiple settlement contexts that can be defined by specific boundaries, each settlement context SHALL be defined as a separate Site Area.		
PS4	Only one settlement context SHALL be used per Site Area.		
PS5	An Overall Site Area or Site Area with over 200 persons per hectare SHALL be defined as a Highly Urban Settlement Context.		
PS6	The Mosque Planning Unit for an industrial area SHALL be 154 ha and maintain a minimum distance of 1,400 m between mosques.		

2.3 Determine Number and Mosque Types

There are three types of mosques:

- Masjid (daily mosques);
- Jame'e (Friday mosques); and
- District jame'e (Eid mosques).

The methodology described below is only used to determine the number of masjid and jame'e mosques required. The allocation of district jame'e mosques will be at the discretion of Awqaf, the DMA and the UPC and assessed based on community requirements.

Once the number and types of mosques have been determined, the preliminary mapping of the distribution of mosques can be done in order to:

- Establish an understanding of the general distribution and location of mosques;
- Identify potential anomalies that may need to be addressed (overlapping catchment areas, gaps where there is no adequate mosque provision, etc.); and
- Identify alternative configurations that may improve efficiency in the provision of mosques.

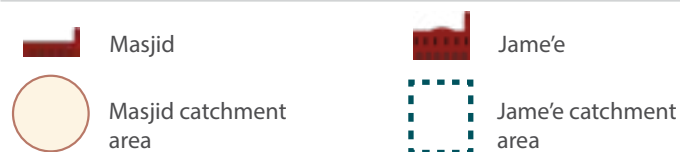
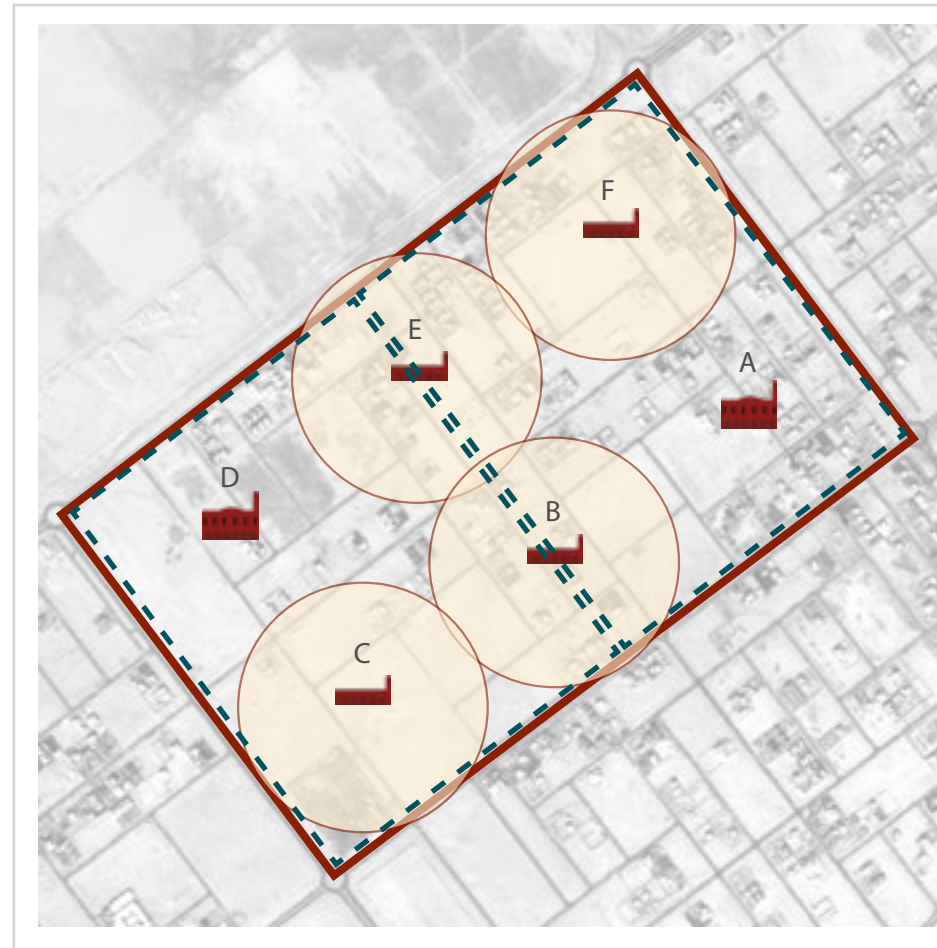


Figure 9: Mosque distribution

CASE STUDY NOTES:

- Site Area = 219 ha
- Settlement context = Suburban
- MPU = 38.5 ha
- Catchment distance = 350 m
- Total number of mosques = 6

For Suburban settlement context also use:

- SMPU = 154 ha
- Catchment distance = 700 m
- Number of masjid mosques = 4
- Number of jame'e mosques = 2

Methodology

- i. To calculate the total number of mosques (N), divide the applicable Overall Site Area or Site Area (SA) by the Mosque Planning Unit (MPU), as identified in Step 2.2.

$$N = SA / MPU$$

- ii. An Overall Site Area or each Site Area with a Highly Urban or Urban settlement context will only have jame'e mosques. Therefore, the number of mosques (N) calculated will equal the number of jame'e mosques.
- iii. For a Suburban settlement context, Site Areas may have both masjid and jame'e mosques.

- iv. To calculate the number of jame'e mosques (JM) within a Suburban settlement context, divide the Overall Site Area or Site Area (SA) by the SMPU.

$$JM = SA / SMPU$$

- v. To calculate the number of masjid mosques (MM) within a Suburban settlement context, subtract the number of jame'e mosques (JM) from the total number of mosques (N).

$$MM = N - JM$$

- vi. Map the preliminary distribution of mosques based on the required catchment distance (refer to Table 2).
- vii. Repeat steps i–vi for each Site Area.

If the total number of mosques required includes a fraction of a mosque, an allowance of 0.3 will trigger the requirement for an additional mosque (i.e. 3.29 = 3 mosques, 3.3 = 4 mosques).

Outcome

- The number and types of mosques within an Overall Site Area or each Site Area will be determined.
- Preliminary mapping of the mosques will be completed.

Standards		Guidelines	
PS7	Mosques SHALL be distributed to minimise overlapping of and gaps between catchment areas.	PG2	The location of a jame'e SHOULD be selected based on the most efficient catchment coverage.
PS8	If there is only 1 mosque within a Site Area, it SHALL be a jame'e.	PG3	In order to minimise traffic congestion within an Overall Site Area or each Site Area, a jame'e MAY be positioned close to or along transport corridors provided it is still within the boundaries of the Overall Site Area or each Site Area that the mosque serves.
PS9	Each district SHALL have a minimum of one District Jame'e abutting a District Level open space, as defined in the Abu Dhabi Public Realm Design Manual.		

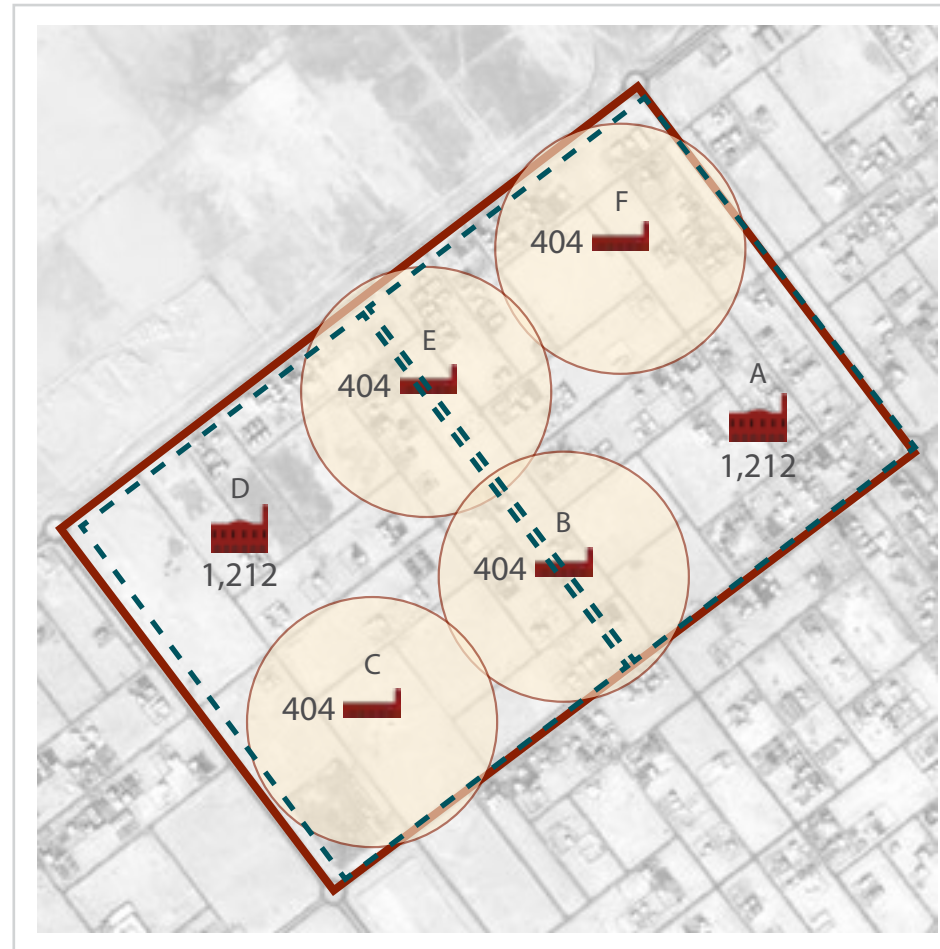
2.4 Determine Mosque Capacity

The projected worshipper population (demand) is calculated as a proportion of the total population within an Overall Site Area or each Site Area. From this, the worshipper capacity of each mosque within an Overall Site Area or each Site Area will be calculated in order to determine the Plot area and GFA of each mosque. This will ensure that the total worshipper population is accommodated.

For the Overall Site Area or each Site Area, three worshipper population categories will need to be calculated:

- Projected worshipper population (W);
- Male worshipper population (M); and
- Female worshipper population (F).

In the design stage (refer to Volume 2 – Design), the number of male and female worshippers is required in order to determine the distribution of GFA for uses within a mosque Plot.



CASE STUDY NOTES:

- Total population of Site Area = 6,922
- Projected worshipper population = 2,423 (35%)
- Number of mosques = 6
- Number of masjid mosques = 4
- Number of jame'e mosques = 2

Capacity of each mosque

- Worshippers per masjid = 404
- Male worshippers = 343
- Female worshippers = 61
- Worshippers per jame'e = 1,212
- Male worshippers = 1,030
- Female worshippers = 182

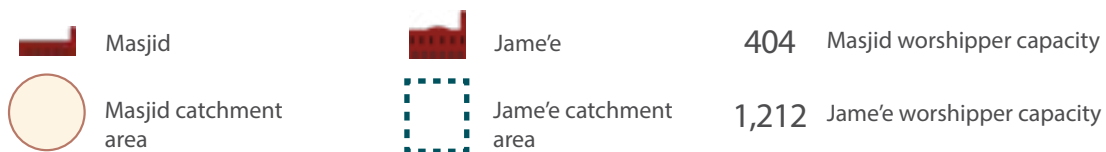


Figure 10: Worshipper capacity of each mosque

Methodology

- i. To calculate the projected worshipper population (W), determine the total population (P) of the Overall Site Area or each Site Area and multiply by 35%.

$$W = P \times 35\%$$

- ii. To calculate the number of worshippers per mosque (WPM), divide the projected worshipper population (W) within the Overall Site Area or each Site Area by the total number of mosques (N) within the Overall Site Area or Site Area.

$$WPM = W / N$$

- iii. Suburban settlement context only: to calculate the number of worshippers per jame'e (WJM), divide the total worshipper population (W) of an Overall Site Area or each Site Area by the number of jame'e mosques required.

$$WJM = (W / JM)$$

- iv. Determine the number of male and female worshippers per mosque as follows:

- Male worshippers = 85% of projected worshipper population; and
- Female worshippers = 15% of projected worshipper population.

- v. Repeat steps ii–iv for each mosque within the Overall Site Area or each Site Area.

Outcome

- The projected worshipper population for the Overall Site Area or each Site Area will be defined.
- The worshipper capacity and number of male and female worshippers for each mosque will be defined.

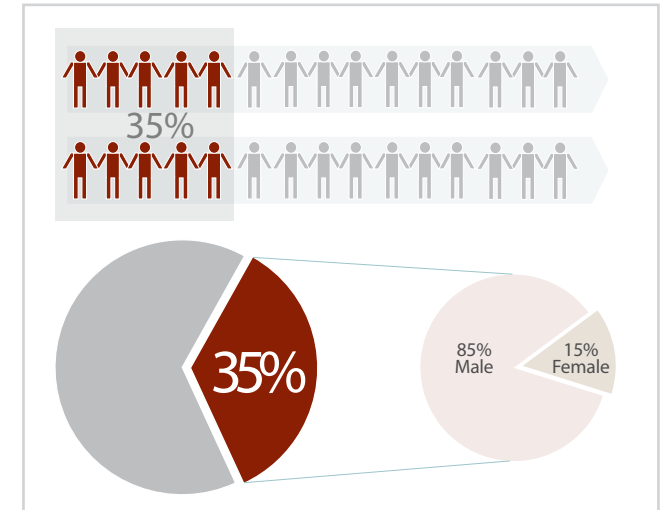


Figure 11: Worshippers as a proportion of total residential population

Standards		Guidelines	
PS10	The projected worshipper population of an Overall Site Area or each Site Area SHALL be calculated as 35% of the total residential population.	PG4	Where an Overall Site Area or each Site Area has a relatively consistent population distribution, the number of worshippers per mosque MAY be evenly distributed, resulting in mosques with equal capacity, GFA and Plot areas.
PS11	The sum of the worshipper populations of all site areas SHALL be, at a minimum, equal to the projected total worshipper population for the Overall Site Area.	PG5	Where an Overall Site Area or each Site Area does not have a consistent population distribution, the number of worshippers per mosque MAY vary accordingly, resulting in mosques that vary in capacity, GFA and Plot area.

2.5 Calculate Plot Area and GFA

The Plot area and GFA is calculated to ensure each Plot and mosque can accommodate the projected worshipper population and meet the requirements of the Regulations.

The Plot area, size and the settlement context will influence the built form of a mosque as presented in Table 2: Summary of Mosque Metrics and Figure 6: Maximum building height.

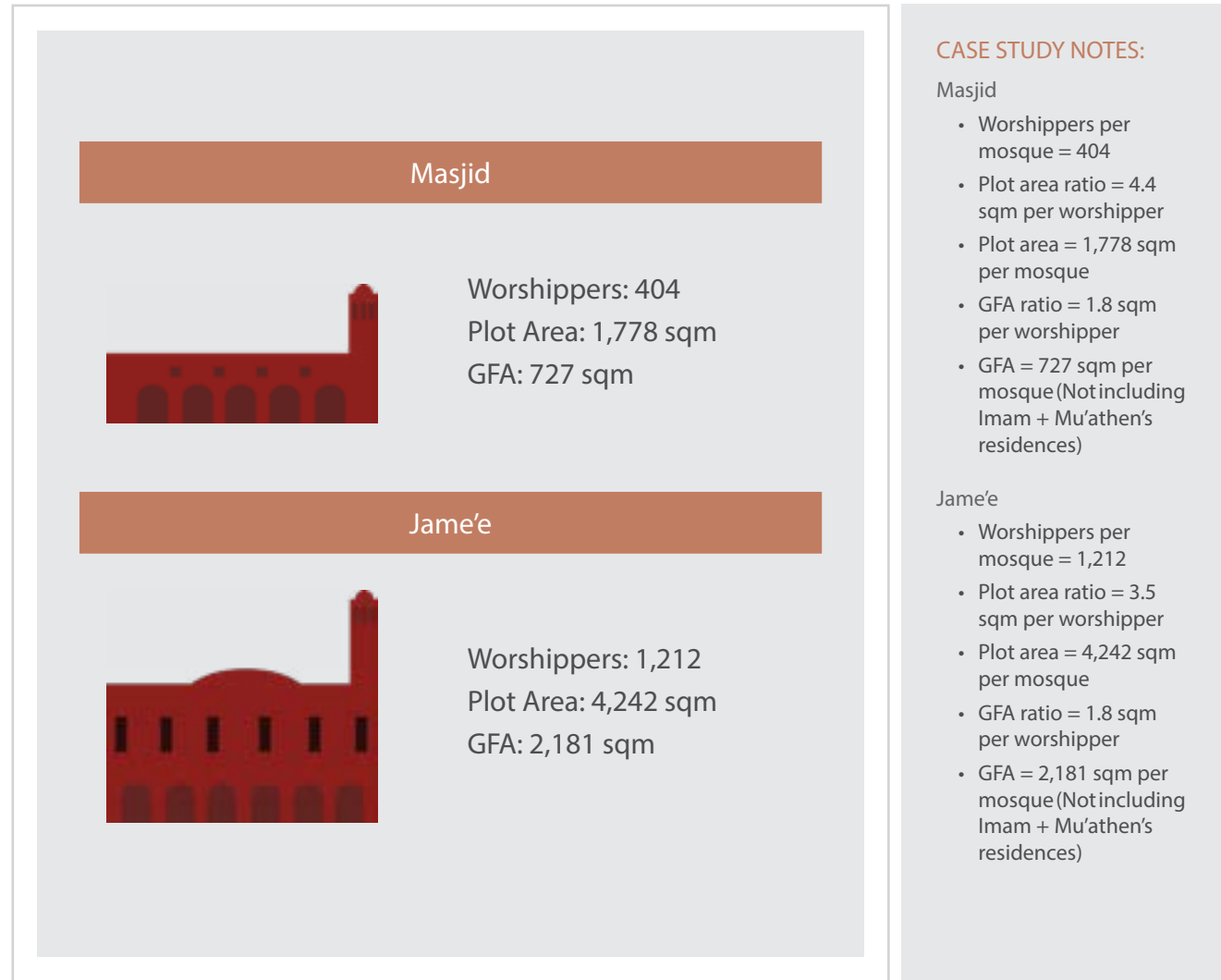


Figure 12: Worshipper capacity of each mosque

Methodology

- i. To calculate the Plot Area (PA), use the formula below:

$$PA = WPM \times PAR$$

- Input the worshippers per mosque (WPM); and
- Refer to Table 2: Summary of Mosque Metrics to determine the required minimum Plot area ratio (PAR) based on the corresponding settlement context and mosque type.

- ii. To calculate the GFA per mosque, use the formula below:

$$GFA = (WPM \times GFAR) + IR + MR \text{ (if required)}$$

- Input the worshippers per mosque (WPM);
- Refer to Table 2: Summary of Mosque Metrics to determine the required minimum GFA ratio (GFAR), based on the corresponding settlement context and mosque type; and
- Use the formula below to add 100 sqm to the total area for an Imam's residence (IR) and 80 sqm to the total area if a Mu'athen's residence (MR) is required (refer to Table 2).

$$GFA = (WPM \times GFAR) + IR + MR \text{ (if required)}$$

- iii. Repeat steps i–ii for each Plot and mosque required.

When calculating Plot area, consider the number of car parking bays required both on and off the Plot (refer to PG18).

Outcome

The Plot area and GFA for each mosque required within an Overall Site Area or Sites Areas will be defined.

2.6 Calculate Musalla Provision (If Required)

All buildings with non-residential GFA (e.g. commercial, retail and industrial buildings) are required to provide a musalla within the built form of the building. The provision of a musalla is supplementary to the provision of a mosque and, as a result, will be provided in addition to the requirement for mosques in an Overall Site Area or each Site Area.



Figure 13: A musalla within an office block – Abu Dhabi City

Methodology

- i. To calculate the projected worshipper population (WP) of a non-residential building, multiply the number of non-residential DoT required vehicle parking spaces (VPS) by 35%.

$$WP = VPS \times 35\%$$

- ii. The number of male worshippers (MW) will be 50% of the projected worshipper population. The number of female worshippers (FW) will be 50% of the projected worshipper population.

- Male worshippers = $WP \times 50\%$
- Female worshippers = $WP \times 50\%$

- iii. Determine the floor area required for each musalla (male and female) by multiplying the number of male/female worshippers by 0.9 sqm.

- Male musalla = $MW \times 0.9 \text{ sqm}$
- Female musalla = $FW \times 0.9 \text{ sqm}$

Outcome

The floor area for male and female musallas in buildings with non-residential GFA will be defined.

Standards		Guidelines	
PS12	The projected worshipper population of buildings with non-residential GFA SHALL be calculated at 35% of the number of non-residential DoT required parking spaces, provided that the minimum area for each musalla is maintained at a minimum of 20 sqm.	PG6	The total musalla area requirement MAY be strategically distributed within a building to optimise coverage.
PS13	Separate musallas SHALL be provided for men and women and SHALL be separated and have separate access points and entrances, and provide appropriate supporting facilities (e.g. shoe racks, ablution facilities, etc.) as per the requirements of Volume 2 – Design.		

STAGE 3

Land Use Planning

3.0 Land Use Planning

Identifying the specific Plots that mosques will be located on is the final step in the planning process. However, a number of factors need to be considered such as:

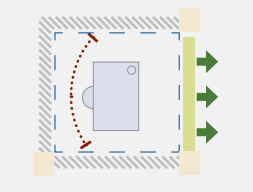
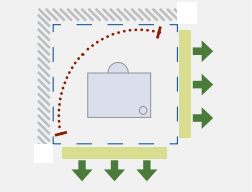
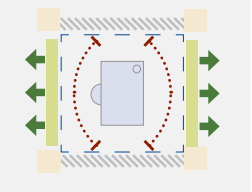
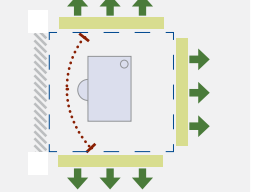
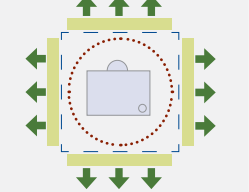
- Selecting an appropriate plot typology;
- Ensuring accessibility requirements are met; and
- Ensuring surrounding land uses do not conflict.

The position and typology of a Plot can influence the extent to which the Regulations are met. Table 4 presents five plot typologies representing the most common formats and their associated characteristics. These plot typologies are to be considered when identifying suitable plots.






Methodology

- Prepare a Mosque Planning Summary Sheet of all calculations that have been completed for the Overall Site Area or Site Areas. (Refer to Attachment B.)
- Use the initial mosque distribution map as a basis for informing the distribution and position of Plots.
- Identify Plots within each mosque catchment area that meet the required Plot area calculated for each mosque.
- Assess the Plots against distribution, orientation, accessibility and land use considerations presented in this stage.
- Select the Plots that best comply with the Regulations.



Table 4: Mosque Plot Typology

PT1	PT2	PT3	PT4	PT5
				
Characteristics				
Infill plots or plots with supporting community facilities located around them.	Located on a corner with 2 pedestrian/vehicular frontages.	Located within a mid-block and is accessible through 2 opposite edges.	Located on the end of a block and is accessible through 3 edges.	Four pedestrian/vehicular frontages.
Opportunities				
Infill plots to develop communities.	Good visibility/accessibility.	Good accessibility/moderate visibility.	Good visibility/accessibility/circulation.	Good visibility/accessibility.
Constraints				
Circulation restricted and poor accessibility and visual recognition.	Possible difficult location for qibla orientation.	Insufficient separation between adjacent uses.	None.	Over-provision of circulation space.
Typology Applicability				
Masjid.	Masjid and jame'e.	Masjid and jame'e.	Masjid, jame'e and district jame'e.	Jame'e and district jame'e.

Legend:

 Frontage	 Recommended qibla direction	 Pedestrian/vehicular frontage
 Built form	 Mosque Plot boundary	

3.1 Plot Distribution and Orientation

Standards		Guidelines	
PS14	The distribution SHALL maintain the minimum distance between mosques as identified in Table 2: Summary of Mosque Metrics.	PG7	Where possible, Plots SHOULD be orientated to enhance the primary entrance.
PS15	The Plot selected SHALL meet the minimum Plot area required for a mosque as calculated using the methodology and standards contained in this volume.	PG8 	Jame'e mosques SHOULD be located close to transportation corridors and/or public transit nodes.
PS16 	A district jame'e SHALL be adjacent to a park/open space to accommodate an increase in the number of worshippers during Eid prayers. (Refer to Figure 14.)	PG9	District jame'e mosques SHOULD be located adjacent to appropriate facilities as assessed based on community requirements. (Refer to the Abu Dhabi Public Realm Design Manual (PRDM) and Abu Dhabi Community Facility Planning Standards (CFPS).)
PS17	The park/open space adjacent to a district jame'e SHALL be along the entrance/side of the Plot so that worshippers are positioned behind the Imam.	PG10	District jame'e mosques within an Urban or Suburban settlement context SHOULD be located within 150 m of public transit.
PS18	The park/open space adjacent to a district jame'e SHALL be designed to ensure that the visual connection and physical continuity of prayer rows are maintained.		

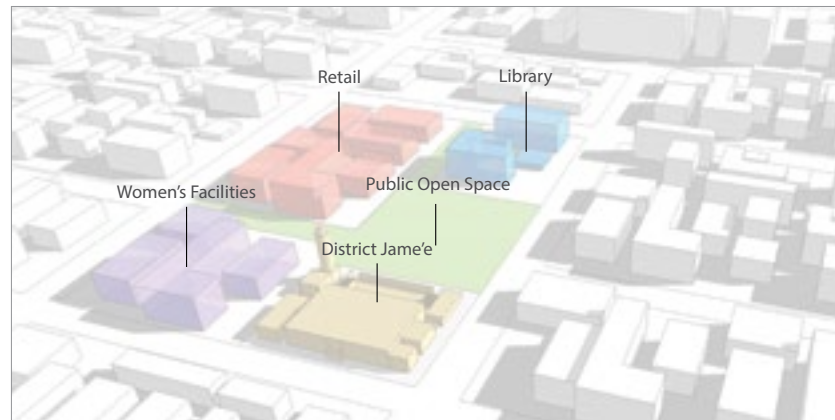


Figure 14: Park adjacent to a district jame'e

3.2 Accessibility


Standards		Guidelines	
Pedestrian			
PS19	Pedestrian pathways leading to a mosque SHALL provide safe access. (Refer to Figure 15.)	PG11 	Pedestrian pathways that provide access to mosques SHOULD be shaded with non-obstructive shade structures and/or landscaping.
		PG12	The street network surrounding mosques SHOULD include pedestrian safety design elements, such as pedestrian tables and pedestrian priority junctions, as per the requirements of the USDM.
		PG13	Strong pedestrian linkages, via pathways, to other appropriate levels of community facilities SHOULD be provided (e.g. for masjid mosques – local retail and for jame’e mosques – a community centre.) (Refer to Figure 16 and Figure 17.)
		PG14	Wherever possible, mosques SHOULD be adjacent to and have barrier-free connections to adjacent or surrounding community facilities.
Vehicle			
PS20	All mosque plots SHALL have good vehicular connectivity.	PG15	Masjid mosques SHOULD have at least 1 edge along a street. (Refer to Figure 18.)
		PG16	Jame’e mosques SHOULD have at least 2 edges along a street. (Refer to Figure 19.)
		PG17	District jame’e mosques MAY have 1 edge along a street provided it is integrated with adjacent community facilities and designed holistically. (Refer to Figure 20.)
Parking			
PS21	The number of parking spaces provided for a mosque SHALL comply with DoT Parking Standards.	PG18	Parking SHOULD be located as follows: <ul style="list-style-type: none"> • On-site (within the mosque Plot); • Adjacent to the mosque Plot; • Co-located/shared with other uses; and/or • On-street parking (not preferred).



Figure 15: Pedestrian linkages to the mosque



Figure 16: Pedestrian pathways linking the mosque to local retail



Figure 17: Pedestrian pathways linking the jame'e to community facilities



Figure 18: Masjid with vehicular linkages along 1 street

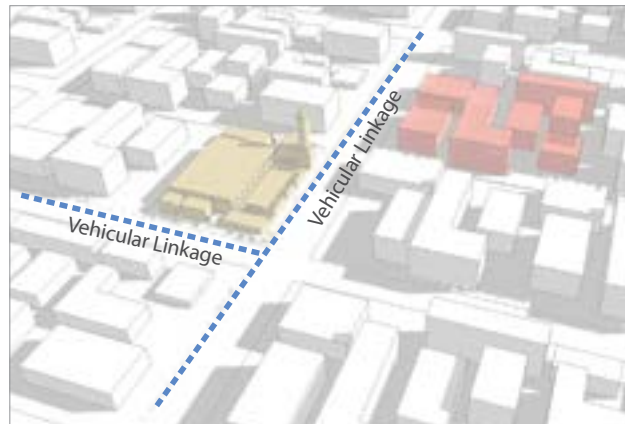


Figure 19: Jame'e with vehicular linkages along 2 streets



Figure 20: District jame'e within a community facilities cluster

Standards		Guidelines	
PS22	Masjid and jame'e mosques SHALL have all required parking provided within 150 m of the Plot.	PG19	District jame'e mosques MAY have off-site parking provided within 300 m of the Plot.
PS23	All mosques SHALL provide, at a minimum, 1 parking space each within the mosque Plot for the Imam, and Mu'athen if required.	PG20	Parking spaces for the Imam, and Mu'athen if required, SHOULD be located at the side or rear of the mosque Plot.
PS24	All mosques SHALL provide disabled parking spaces within the Plot that meet DoT Standards.		
PS25	All mosque plots SHALL provide space allocated for civil defence to comply with ADCD requirements.		
PS26	Basement parking for mosques SHALL NOT be permitted.	PG21	Large parking areas SHOULD be designed to wrap around a maximum of 2 edges of the mosque Plot and have an adequate number of entrances and exits to comply with DoT Parking Standards.
PS27	A risk assessment SHALL be performed prior to mosque approval if a mosque is built on top of an existing parking structure (underground or podium) that is not associated with that mosque.		
PS28	On-street parking SHALL only be placed at the side and/or rear of a mosque and not be adjacent to the entrance.	PG22	Wayfinding signage directing people to the mosque SHOULD be provided in shared and/or off-site parking areas.

3.3 Land Use Considerations

Standards		Guidelines	
PS29	View corridors along streets leading to a mosque SHALL be promoted. (Refer to Figure 21.)	PG23	View corridors to 1 or more mosque façades SHOULD be defined (e.g. use of a topographical high point).
PS30	Utility plots with above-ground structures (including telecommunication towers) SHALL NOT be located within 50 m of a mosque Plot.	PG24	Opportunities for uninterrupted views from the streetscape/public realm to at least 1 façade of the mosque SHOULD be provided.
PS31	Existing utility plots around the mosque SHALL be aesthetically screened off to reduce their visual impact.	PG25	The following uses are compatible with and MAY be located adjacent to or within the vicinity of a mosque Plot: <ul style="list-style-type: none"> Residential, commercial, retail, educational, institutional, recreational, healthcare, light industrial and transit nodes.
PS32	All mosques SHALL be planned as part of an integrated community facilities master plan. (Refer to Figure 22.)	PG26	The following facilities SHOULD be considered within the vicinity of a masjid: <ul style="list-style-type: none"> Grocery stores; Pocket parks; and/or Barahaat.
PS33	Retail uses SHALL be prohibited within the mosque Plot boundary.	PG27	The following facilities SHOULD be considered for location adjacent to a jame'e: <ul style="list-style-type: none"> Neighbourhood centres; Playgrounds; Grocery stores; Public parking; Neighbourhood parks; and/or Plazas.
PS34	The following uses SHALL NOT be within 50 m of a mosque Plot: <ul style="list-style-type: none"> Hotels; and/or Heavy industry. 		

Standards		Guidelines	
PS35	Adjacent land uses SHALL be of a compatible scale with the mosque and create opportunities for community nodes. (Refer to Figure 23.)	PG28	<p>The following facilities SHOULD be considered for location within the vicinity of a district jame'e:</p> <ul style="list-style-type: none"> • Playgrounds; • Community centres; • Libraries; • Restaurants and cafés; • Souqs and supermarkets; • District parks; and/or • Mayadeen.



Figure 21: View corridors along streets leading to a mosque

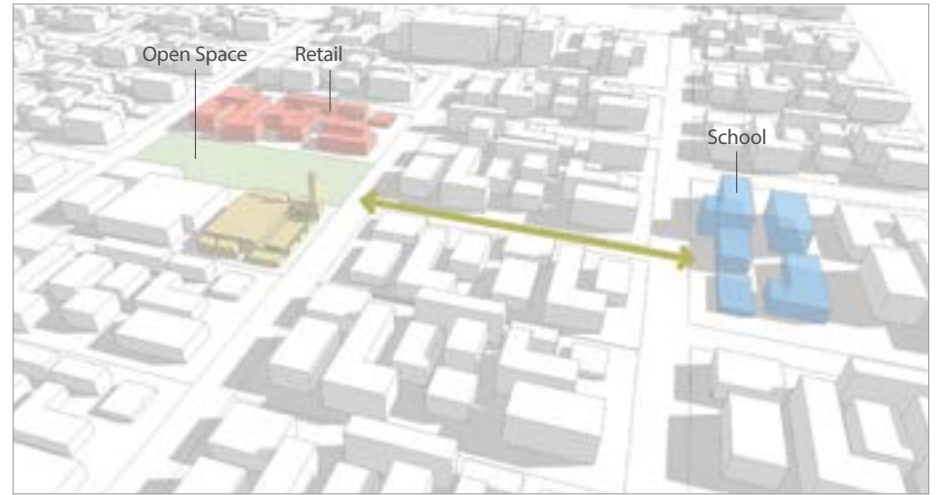


Figure 22: Community planning to ensure community facilities are linked



Figure 23: Adjacent community facilities should be of a comparable size to the mosque

Attachment A:
Estidama Compliance Checklist

Attachment A: Estidama Compliance Checklist*

Section Number	Standards/ Guidelines Number	Volume 1 Page No.	Standards and Guidelines	Estidama PBRS Credit	Appendix 1 – Estidama: Section Reference	Appendix 1 Page No.
1.1	Policy	9	Provision Policy.	LBo-R2	2.1 Natural and Urban Systems Assessment	16
1.2	Policy	9	Location Policy.	NS-R1 LBo-R2	2.0 Site Context	15
					2.1 Natural and Urban Systems Assessment	16
					3.3 Accessibility and Provision of Community Facilities	26
1.3	Policy	9	Access Policy.	LBo-1 LBo-R3 LBo-R2 LBi-10	2.0 Site Context	15
					2.1 Natural and Urban Systems Assessment	16
					3.2 Outdoor Thermal Comfort	25
					3.3 Accessibility and Provision of Community Facilities	26
					3.4 Safe, Secure and Healthy Environments	27
1.4	Policy	10	Wider Community Policy.	LBo-R2 LBo-3	2.0 Site Context	15
					2.1 Natural and Urban Systems Assessment	16
					3.3 Accessibility and Provision of Community Facilities	26

* Standards and guidelines related to optional credits are not applicable to mosques required to comply with a minimum 1 Pearl Rating.

Section Number	Standards/ Guidelines Number	Volume 1 Page No.	Standards and Guidelines	Estidama PBRS Credit	Appendix 1 – Estidama: Section Reference	Appendix 1 Page No.
2.1	Methodology	16	Identify Boundaries and Land Area.	NS-R1 LBo-R2	2.0 Site Context	15
					2.1 Natural and Urban Systems Assessment	16
					3.3 Accessibility and Provision of Community Facilities	26
3.1	PG8	30	Jame'e mosques SHOULD be located close to transportation corridors and/or public transit nodes.	LBo-R2 LBo-3	2.0 Site Context	15
					2.1 Natural and Urban Systems Assessment	16
					3.3 Accessibility and Provision of Community Facilities	26
3.1	PS16	30	A district jame'e SHALL be adjacent to a park/open space to accommodate an increase in the number of worshippers during Eid prayers.	LBo-3	2.1 Natural and Urban Systems Assessment	16
					3.3 Accessibility and Provision of Community Facilities	26
3.2	PG11	31	Pedestrian pathways that provide access to mosques SHOULD be shaded with non-obstructive shade structures and/or landscaping.	LBo-R3 LBo-1	3.2 Outdoor Thermal Comfort	25
3.3	PS32	34	All mosques SHALL be planned as part of an integrated community facilities master plan.	IDP-R1 LBo-3	1.4 Develop an Implementation Strategy	11
					2.1 Natural and Urban Systems Assessment	16
					3.3 Accessibility and Provision of Community Facilities	26

Attachment B:

Mosque Planning Case Study Summary Sheet

Attachment B: Mosque Planning Case Study Summary Sheet

Mosque*						
	A	B	C	D	E	F
Type	Jame'e	Masjid	Masjid	Jame'e	Masjid	Masjid
Plot Number	If known	If known	If known	If known	If known	If known
Actual Plot Area	If known	If known	If known	If known	If known	If known
Settlement Context	Suburban	Suburban	Suburban	Suburban	Suburban	Suburban
Number of Worshippers	1,212	404	404	1,212	404	404
Male Worshippers	1,030	343	343	1,030	343	343
Female Worshippers	182	61	61	182	61	61
Minimum Plot Area Required	4,242 sqm	1,778 sqm	1,778 sqm	4,242 sqm	1,778 sqm	1,778 sqm
Minimum GFA Required	2,181 sqm	727 sqm	727 sqm	2,181 sqm	727 sqm	727 sqm
Imam's Residence	100 sqm	100 sqm	100 sqm	100 sqm	100 sqm	100 sqm
Mu'athen's Residence	80 sqm	Not required	Not required	80 sqm	Not required	Not required
Maximum Plot Coverage	60%	60%	60%	60%	60%	60%
Minimum Open Space/ Parking Coverage	40%	40%	40%	40%	40%	40%
Maximum Building Height	G+1	G	G	G+1	G	G
Minimum Car Parking Spaces	81	27	27	81	27	27
Minimum Bicycle Parking Stands	10	5	5	10	5	5

* Refers to mosques illustrated in Figure 9.



Glossary

Glossary

Administrative Terms

Term	Definition
ADCD	Abu Dhabi Civil Defence.
ADMDR	Abu Dhabi Mosque Development Regulations.
Awqaf	The General Authority for Islamic Affairs and Endowments (GAIAE).
DoT	Abu Dhabi Department of Transport.
Estidama	Meaning 'sustainability' in Arabic, it is the established guidelines and principles for the promotion of sustainability in development projects within the Emirate of Abu Dhabi.
Guideline	The preferred practice in typical situations or an advisory statement on how to comply with a standard.
IBC	International Building Code.
Standard	An instruction that is considered a requirement or mandate.
UPC	Abu Dhabi Urban Planning Council.

Religious Terms

Term	Definition
Ablution	The mandatory cleansing prior to prayer.
District Jame'e	A jame'e located adjacent to district-level community facilities.
Imam	Islamic religious leader of prayer. The Imam also manages the day-to-day running of the mosque.
Jame'e	Mosque used for Friday prayers and other daily prayers.
Friday Prayers	The weekly congregational prayers that occur every Friday at noon time.
Masjid	Mosque used for daily prayers – the colloquial term is 'local mosque'.
Mu'athen	A person who assists the Imam and is responsible for the call to prayer.
Musalla	Meaning 'place for performing prayer' in Arabic. Throughout this volume, it specifically refers to a secondary prayer facility that is usually embedded in a building with a predominantly non-religious use such as an office building or a shopping mall.
Qibla	The direction of performing prayers, which is towards the Kaaba in Makkah, the Kingdom of Saudi Arabia.

Technical Terms

Term	Definition
Accessibility	The ability for people of all ages, including those with impaired mobility, to physically access desired destinations, services and/or activities.
Affection Plan	Also known as a Site Plan or Plot Plan. A graphic illustration showing the exact coordinated location of a site issued and approved by the Abu Dhabi Government which includes: plot owner, plot area, land use, sector and plot identifier.
Basement	The habitable storey of a building, which is wholly or partly below ground level.
Community	An immediate walkable area within which a group of residents live.
District	A group of sectors, within cities, towns or small settlements, which is served by district-level open space and amenities.
GFA	Gross Floor Area (GFA). The sum of all horizontal areas of each floor of a building or structure, measured from the exterior wall faces of the exterior walls, or from the centre line of walls separating 2 buildings, subject to the rules of measurement for determining GFA.
Highly Urban Settlement Context	An area with a population greater than 200 persons per hectare.
Mosque Catchment Area	The area of planned influence and service area of the mosque.
Mosque Planning Unit (MPU)	Mosque Planning Unit (MPU). The catchment area defined to serve an individual mosque.
Neighbourhood	A collection of three to four communities.
Off-site Parking	Parking provided at site(s) not within or adjacent to a mosque Plot. It is a typical solution for dispersed parking.
On-site Parking	Parking areas and parking spaces that are located within the mosque Plot.
On-street Parking	Parking areas and parking spaces that are located on the street and/or in areas adjacent to the street within a right-of-way (RoW).
Parking Area	An area specifically designated for vehicle parking.

Technical Terms (continued)

Term	Definition
Parking Space	The division of a parking area marked by column spacing or markings on the ground.
Plot Coverage	That portion of a plot that is occupied by any building or structure, typically expressed as a percentage of the building footprint area to total plot area.
Rural Settlement Context	An area with a very low population density and no specific building type. Buildings in this settlement context are usually isolated. (As defined in the Abu Dhabi Community Facility Planning Standards.)
Secondary Mosque Planning Unit (SMPU)	Secondary Mosque Planning Unit (SMPU). In a Suburban settlement context, the catchment area of a jame'e.
Settlement Context	A classification used to describe Highly Urban, Urban, Suburban or Rural areas within the Emirate based on varying built forms, geographic areas and access to services. (Refer to the Abu Dhabi Community Facility Planning Standards.)
Site	A single plot or a combination of plots that are under single ownership or unified control, which together form the boundaries of an area to be developed.
Sqm	Square metres.
Suburban Settlement Context	An area where most of the building types are villas. (As defined in the Abu Dhabi Community Facility Planning Standards.)
Sustainability	Identifies a concept and attitude in development that considers a plot's natural land, water, and energy resources as integral aspects of the development.
Temporary Mosque	A mosque with a roof made of temporary and/or removable materials such as wood, corrugated sheets, etc.
Typology	The systematic classification of types of uses/styles that have characteristics, traits or functions in common.
Urban Settlement Context	An area where most of the building types are mid-rise. (As defined in the Abu Dhabi Community Facility Planning Standards.)

Acknowledgements

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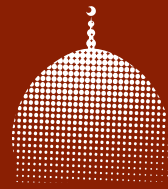
Abu Dhabi Urban Planning Council

Government Agencies

General Authority of Islamic Affairs & Endowments (Awqaf)
Department of Municipal Affairs
Abu Dhabi City Municipality
Al Ain City Municipality
Western Region Municipality
Abu Dhabi General Services Company (Musanada)
Abu Dhabi Tourism & Culture Authority
The Emirates Centre for Strategic Studies and Research
National Centre for Documentation and Research

Other Contributors

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لجنة تطوير المساجد
mosque development committee