

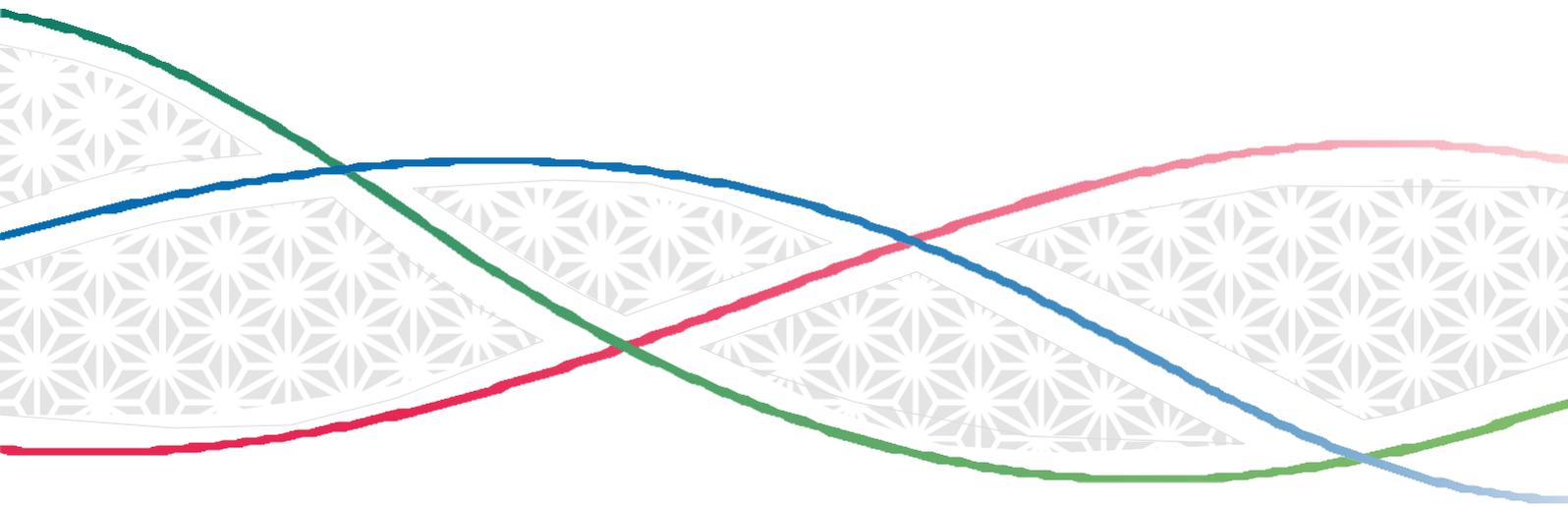


WATER TRANSMISSION PLANNING GUIDELINES FOR DEVELOPMENT PROJECTS

(UPDATE 2023)

POWER & WATER PLANNING DIVISION

WATER TRANSMISSION PLANNING DEPARTMENT



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1. INTRODUCTION

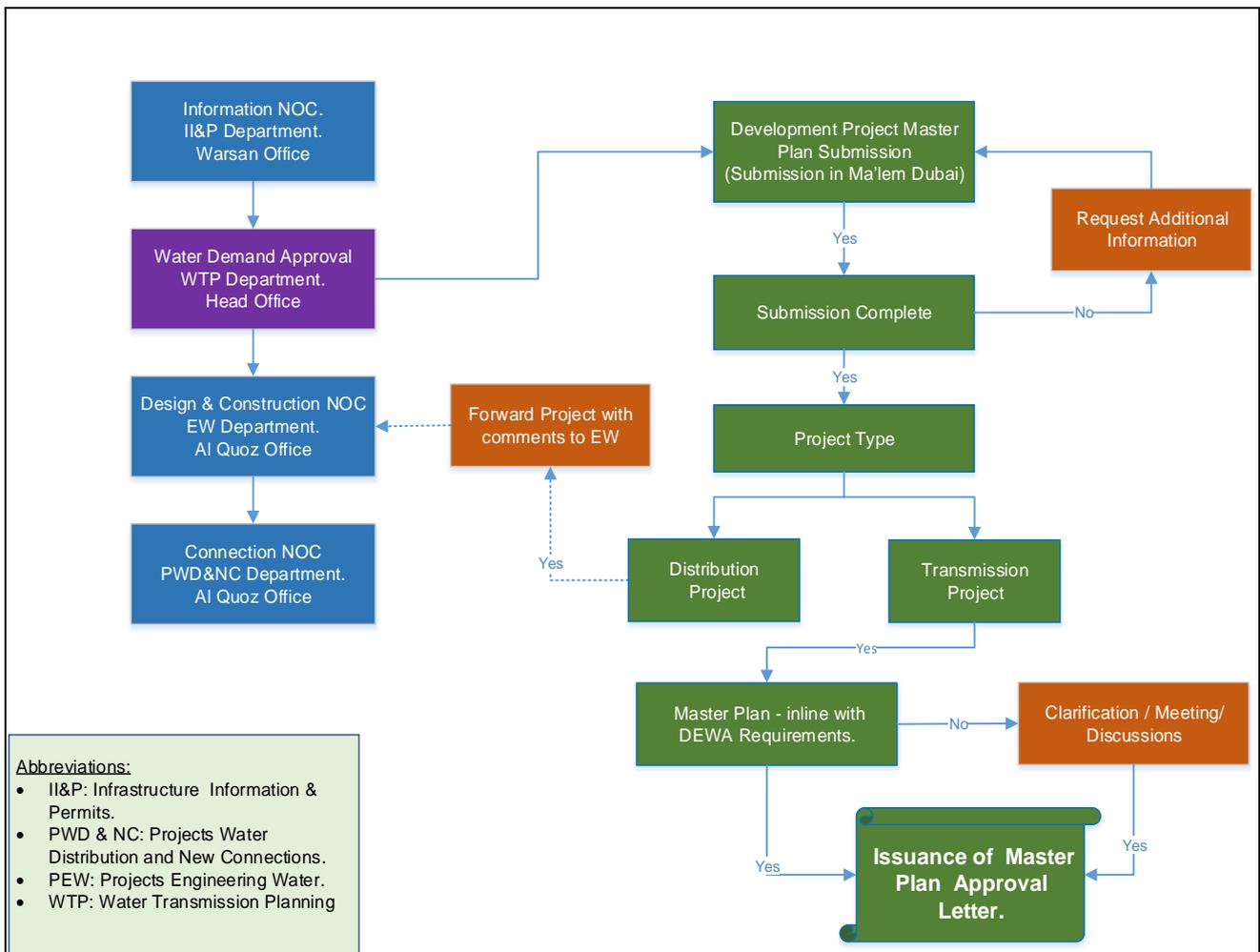
In order to ensure timely, optimal and reliable water supply services to development projects across Dubai, it is essential that the developers and their consultants prepare the complete development project(s) master plans and submit to DEWA.

The purpose of these guidelines is to provide developers/consultant with adequate information to help with the preparation and submission of their development project master plan. The Guidelines include all requirements related to project's water demands and phasing, population, land use, network layout information hydraulic models, etc. to be submitted as part of the master plan submission for DEWA's review and approval. The project information, once reviewed and approved, will be used by DEWA for Water Infrastructure planning activities.

It is therefore essential for developers and their consultant to ensure that development master plan is prepared in line with DEWA's Guidelines for a timely and efficient approval process.

This document includes itemized requirements for each of the development master plan components. The chart below outlines the Development Master Plan Approval Process. The process applies to Ma'alem Dubai water application after registration.

Figure 1: Development Projects Water Supply Master Plan Approval Process



2. DEVELOPMENT PROJECT MASTER PLAN SUBMISSION REQUIREMENTS

In order for DEWA to process the application, a signed checklist (Annexure 1) should be provided along with the following requirements.

1. The complete development project Master Plan Report document.
2. DEWA's Information NOC issued for the project (Not older than 6 months).
3. Colored location maps and layout of the project (all soft file in CAD or GIS system shape file format, should be geo-referenced to DLTM coordinate system).
4. Project's water demand calculation sheets, (all demand calculations should be provided in MS Excel spreadsheet format including all assumptions/formulas used along with referenced data files).
5. Consumption rates and peak-factors used to calculate Average and Peak Demands along with justification of the same, as applicable.
6. Land use classified demand calculations including percentage of land use types and year wise percentage of expected occupancy.
7. Year wise cumulative plot wise/zone wise and phase wise water demands.
8. Statements for additional plots / corridors availability for the development project as per DEWA requirements (if applicable)
9. Internal network layout indicating proposed take offs/connection points, year required and assumed/required pressure at each take point. (PDF & CAD format/shape files).
10. Project's water network InforWorks or any Epanet compatible hydraulic modelling file(s) developed for the (geo-referenced to the Dubai coordinate system (DLTM)).

2.1 DOMESTIC WATER DEMAND

Domestic demand is defined as the water supplied by DEWA such as Residential, Commercial, Industrial and Government & Others (Mosque, Police Station, Government Hospital, etc.). (Refer to Table 1.) Developers/Consultants are requested to include the detailed calculations and the following information in the domestic water demand submission:

- Plot-wise land use and population information.
- Projected Estimated Yearly occupancy rates as per the phasing of the project.
- Digital calculations worksheets based on information used to estimate the total water demands, such as population, land use, consumption rates, etc.

2.2 PER CAPITA CONSUMPTION RATES

Table 1 below outlines typical ranges of water consumption rates, which Developers/Consultants are advised to use as a reference for calculating different land use demands for the projects.

In line with DEWA Sustainability Strategy, Developers/Consultants are encouraged to avoid the use of potable water demand maximum rate value while calculating the demands, unless there are valid justifications based on the requirements of the project.

Table 1. DEWA Reference Per Capita Consumption Rates

User Category	Consumption Rates (L/Cap. Day)
Based Metal Chemical Zone	100
Day Clinic (per Medical Practitioner) including Visitors	300 - 450
Club house/Recreation	100
Commercial Buildings	60-100
Entertainment & Leisure/Theater	10-60
Events	10-50
Guardhouse	60-75
Headquarters	60-80
Hotels (per employee)	60-80
Hotels (per guest)	200-300
Laboratory	60-80
Labour Accommodation	80-150
Local Plaza/Retail/Town Center	60-82
Logistic, Academic & Business Center	60-75
Manufacturing/Mineral	60-80
Medical (per bed)	350-450
Mixed Used Commercial	60-80
Mixed Used Residential	250-350
Mosques	10 - 60
Nursery/Child Care Centre	50-70
Offices	45-60
Public Amenities	10 - 50
Residential Buildings (flat)	200-300
Restaurant (per meal)	10-15 l/d per meal
Schools/University	40-60
Shops	45-60
Theatre	10-50
Villas	250-350
Visitors	14-40
Industrial (Workshops/Machinery/Warehouse, etc.)	60-80

Source: Standard Practices & Information from Development Projects Master Plans.

2.3 NON-DOMESTIC WATER DEMAND

DEWA does not normally supply potable water for non-domestic purposes such as:

- Construction purposes (particularly at projects' areas with No Existing network).
- Water features without human contact (lagoons, fountains, etc. for landscaping and beautification purposes).
- Irrigation / landscaping purposes.
- District cooling purposes.
- Firefighting (Except for initial filling of fire water tanks)

Conditional exemptions may be made in the following cases:

- Unavailability of alternative water supply such as TSE supply, or the requirement by DM for alternative back-up supply.
- Temporary supply of potable water for non-potable purposes (DC, Irrigation, Water features with human contact for health reasons, etc. excluding construction).
- Supply for initial filling of firefighting tanks.

The above will be subject to some conditions which may include:

- The developer to acknowledge that priority of potable water supply is given to customers for domestic purposes.
- A separate connection from DEWA potable water system and should be designed with adequate protection to prevent back flow for health and safety reasons as per DEWA requirements.
- Back-up connection will only be used during emergency or shortage/disruption of TSE supply.
- The developer to adopt the most efficient and sustainable irrigation techniques in order to reduce irrigation water demand.
- Filling of firefighting tank/ lagoon should be done as per the approved flow rate and during off-peak demand period (minimum filling duration of one day).
- For temporary supply, the developer should make provisions in their design and construction of the Permanent District Cooling plants to be suitable for using TSE water, and should fully and permanently switch to TSE water as soon as it is made available.

2.4 YEARLY WATER DEMAND PHASING

The phasing of the project water demand is the most critical factor for planning expansions of water infrastructure and ensuring timely water supply to the project. Therefore, the developer/consultant is required to make reasonable phasing and submit the estimated year- wise water demands of the project up to the ultimate development horizon year, including the projected yearly population and projected occupancy rates.

3. DEVELOPMENT PROJECT WATER NETWORK

3.1 CONNECTION POINTS

Each development project should have at least two connections to DEWA water system: Main Supply and Back up Connection. As much as practically possible, each connection should be designed to supply independently the development's full demand. Developers/Consultants are expected to provide locations of the proposed connection points with coordinates for DEWA review and approval.

3.2 NETWORK DESIGN REQUIREMENTS

Although the approval of the water network is part of the design NOC process, Table 2 below outlines some criteria to be used for design of the network and building of the model. A hydraulic model should be built for the development project water network, and used as a basis and tool for network design. DEWA will review the models in contrast with DEWA planning design criteria, and make recommendations for changes accordingly.

Table 2: Network Design Criteria and Hydraulic Modelling Requirements

Design Criteria	Transmission	Distribution
Peak Factor	1.25 - 1.3	
Pipeline Diameters (mm)	(1200mm, 900mm, 600mm)	(450mm, 300mm, 225mm and 150mm)
Pipelines and Fittings Material	Glass Reinforced Epoxy (GRE) PN10 / PN16 (subject to DEWA's approval)	
Maximum Velocity (m/s)	1.5	1
Minimum Pressure in water network (Bar)	1.5	1
Working Pressure in water network (Bar)	1.5 – 4.0	1.0 – 1.5
Minimum Pressure at Connection Point (Bar)	1.5	
Minimum Number Connection Points to	2	
Hydraulic Model	Hydraulic Models shall be submitted preferably in InfoWorks WS Pro model format or in EPANET (.inp/.net) format.	
	Model Coordinate System shall be georeferenced to Dubai Local Transverse Mercator (DLTM)	
	Refer to section 3.1 for Connection Points details which shall initially be based on DEWA's Information NOC issued for the project.	
	Minimum Three Scenario Models shall be prepared: <u>Scenario Model 1</u> - Ultimate Demand with main Supply and back-up Connections open <u>Scenario Model 2</u> - Ultimate Demand with main Supply Connection Open and Back-up Connection Closed. <u>Scenario Model 3</u> - Ultimate Demand with main Supply Connection Closed and Back-up Connection Open.	
	Additional Model Scenarios maybe requested by DEWA depending on the initial evaluation of the hydraulic models.	

4. SUSTAINABLE DEVELOPMENT

DEWA has embarked on its sustainability journey with the goal of becoming a globally leading sustainable innovative corporation. A tremendous amount of effort is being put into sustainability at all levels, and this includes a strategy that adopts a triple bottom concept covering the social economic, and environmental aspects, which are at the heart of sustainable development.

DEWA encourages Developers/Consultants to adopt innovative and sustainable solutions in all aspects of their development projects design, considering optimal designs, minimizing leakage and the need for future network modifications, while maintaining a safe and reliable water supply.

5. ADDITIONAL REQUIREMENTS

5.1 LEAD TIME

Developers/Consultants are advised to prepare and submit their Development Master Plan well ahead. This will give DEWA adequate time to plan for infrastructure expansion requirements to supply the project which may require long lead time.

5.2 PLOTS AND CORRIDORS

Depending on the project's size and location, the developer maybe required to allocate a land plot for DEWA pumping station or reservoir to supply the area. Similarly, water transmission corridors may also be required. These requirements will be identified, communicated and discussed during the approval process.

5.3 BOOSTER STATIONS

In some cases, and depending on the development location and its topography, the developer maybe required to design the water network into zones with different pressures, which may require a water distribution booster to supply the higher areas within the development land.

6. SUBMISSIONS

6.1 Ma'lem Dubai (Water)

Ma'lem Dubai (Water) is an online DEWA service available to all developers and their consultants for submitting, tracking, and obtaining approvals of Development Projects' Water Master Plans, as well as Re-validation of previously approved Master Plans. This service enables the enrolled / registered Developers and Consultants to submit the development projects Water Master Plans for DEWA review and approval, to ensure timely provision of reliable water supply.

The process can be initiated online through DEWA Builder Portal website [here](#).

The "Ma'lem Dubai User Manual", which provides guidelines and information on the registration and submission processes, is also available on DEWA website [here](#). The main steps to be followed by Developers and Consultants are detailed in Figure 2- Ma'lem Dubai Water Process Chart below. Please refer to the user manual for more details:

Important Notes:

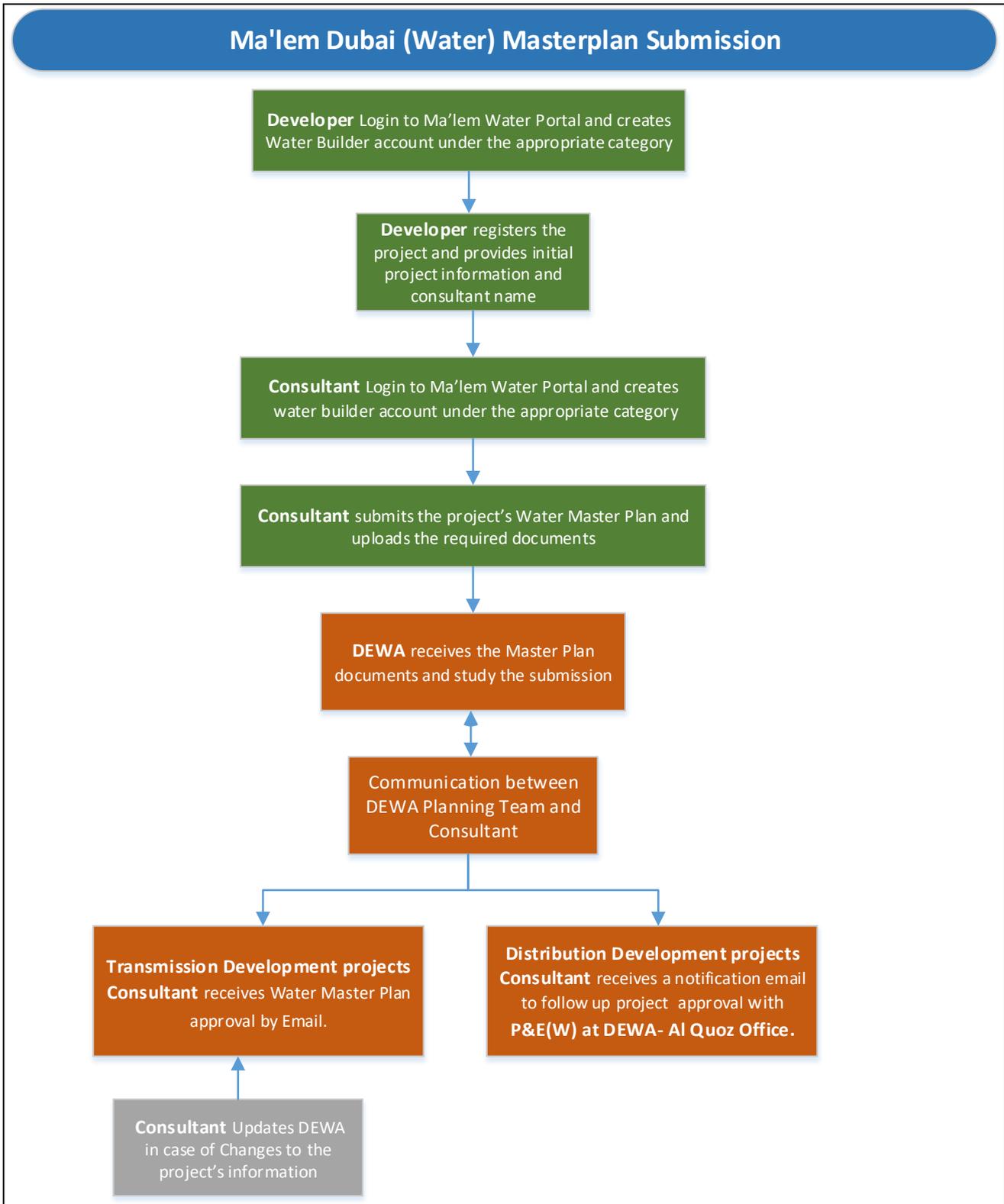
- 1. Developer and Consultant need to register and create an account with category (Developer – Private or Developer Government / Consultant – Major Projects). Please click [here](#) for account registration*
- 2. Please note that only builder accounts with categories (Developer – Private or Developer Government) and (Consultant – Major Projects) are accessible in Ma'lem Dubai (Water).*

6.2 Stamping of Project's Sign-Off Sheets

Stamping of Sign-off-sheet can only be provided for previously approved development projects' master plans, and is currently done in person at DEWA Head Office, Water Transmission Planning Department, subject to the following:

- The project has recently been approved and there are no changes to any project information related to demands, land use, population etc.
- The information details illustrated on the Sign-off-sheet drawing is identical to the approved details submitted previously for the project.

Figure 2. Ma'lem Dubai (Water) Process Chart



6.3 CONTACTS

The complete Development Master Plan including the signed checklist (Annexure 1) should be submitted via Ma'lem Dubai Water, with all communications address to:

Mr. Boualem Belhadj

Senior Manager - Water Transmission Planning Dubai Electricity & Water Authority
P.O. Box 564, Dubai, U.A.E.
Tel.: 04-32-22700 - Ext. # 22700
Fax.: 04-3249206
Email: boualem.belhadj@dewa.gov.ae

For clarifications related to the submission, and requests for meetings should please contact:

Ms. Maria Isabel Santos Igarta

Tel.: 04-32-22701
Email: Maria.Igarta@dewa.gov.ae

For clarifications regarding Ma'lem Application, please contact:

Ms. Noora Yousuf Ibrahim Alhasawi

Tel.: 04-32-22815
Email: Noora.alhasawi@dewa.gov.ae
Also you can contact the Department email: WaterTransmission.Planning@dewa.gov.ae

7. THE APPROVAL PROCESS

- Following the submission, DEWA will review the submitted documents and confirm their completeness.
- DEWA Water Transmission Planning Engineers will coordinate with the Developer/Consultant for any queries/issues associated with the submission. Meetings may be arranged as required.
- Based on water demand, if the development project is classified as Distribution Project, the submission will be forwarded to Projects Water Distribution Section under Projects and Engineering Department, Water and Civil Division- Al Quoz office. The Developers/Consultants will be notified via email to coordinate with the said department accordingly.
- DEWA will process the application and issue an approval letter to the Developer/Consultant by email.
- The Developer/Consultant is required to confirm the receipt of the project approval and, if applicable, the acceptance of any associated conditions.
- Further, the Developer/Consultant shall coordinate with DEWA's Water & Civil Division, Projects & Engineering Department, Water Projects Department in Al Quoz Office for design NOC and connection matters.

8. ANNEXURE

8.1 DEVELOPMENT PROJECT MASTER PLAN SUBMISSION CHECKLISTS

According to the type of demand required (Domestic / Non-domestic), the related checklist(s) below should be duly filled, signed, and stamped by the consultant before attaching to the submission.

Development Project Master Plan (Domestic)

Submission Checklist

Project Name: _____

Developer : _____

Consultant: _____

S/N	Document Description	Remarks
1	Cover letter introducing the submission addressed to: Mr. Boualem Belhadj – Senior Manager - Water Transmission Planning.	
2	The complete development project's Master Plan Document.	
3	Copy of a valid DEWA's Information NOC issued for the project (valid for 6 months).	
4	Colored digital Location map and layout files of the project in CAD format (.dgn , .dxf) or GIS system shape file format, using DLTM coordinate system.	
5	Project's water demand calculation sheets, (all demand calculations should be provided in MS Excel workbook format including all formulas used along with references).	
6	Consumption rates and factors used to calculate Average, and Peak Demands along with justification of the same, as applicable.	
7	Demand calculations including areas of land use types and year wise percentage of expected occupancy.	
8	Year-wise phased total demand, Land use wise, zone wise and phase wise demands.	
9	Statements for provision of DEWA requirements of plots / corridors by the developer (if applicable).	
10	Digital file of internal network layouts indicating proposed take off /connection points, year required and expected pressure at each of them. (PDF & CAD DXF/Dwg format)	
11	InfoWorks/Epanet compatible project water network hydraulic models files developed for the study geo-referenced to the actual Dubai coordinate system (DLTM) and DXF file of the same.	

Consultant Signature, Date & Stamp:

Development Project Master Plan (Non-Domestic)

Submission Checklist

Project Name: _____

Developer : _____

Consultant: _____

S/N	Document Description	Remarks
1	Cover letter explaining your request, addressed to Mr. Boualem Belhadj – Senior Manager - Water Transmission Planning	
2	A letter from Dubai Municipality/ Developer clearly justifying the need for using potable water for non-potable purposes.	
3	Copy of a valid DEWA's Information NOC issued for the project (valid for 6 months).	
4	Colored soft Location map and layout files of the project in CAD format (.dgn/.dxf) or GIS system shape file format, using DLTM coordinate system.	
5	Detailed Water demand calculation of District Cooling, filling firefighting tank, irrigation, or water features as applicable, etc. (in excel format).	
6	Year-wise phased total demand, plot wise /zone wise and phase wise demands.	
7	Statements for plots / corridors availability for the development as per DEWA requirements (if applicable)	
8	Digital file of internal network layout indicating proposed take off /connection points, year required and expected pressure at each of them. (PDF & CAD, DXF/DWG format)	
9	If applicable, InfoWorks/Epanet compatible project water network hydraulic models files developed for the study geo-referenced to the actual Dubai coordinate system (DLTM) and DXF file of the same.	

Consultant Signature, Date & Stamp:



customer@dewa.gov.ae | www.dewa.gov.ae



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Our Vision
A globally leading sustainable innovative corporation

P.O. Box 564, Dubai, United Arab Emirates
T: +971 4 601 9999