

### Underground water review

A hydrogeological survey of the "Zamyn-Uud" FEZ area was conducted in 2008 by "OrkhonHydroGeo" LLC and there has been no significant survey made before that. In 1998, the Geoecology Institute at the Scientific Academy of Mongolia compiled results of previously-made surveys and hydrochemical analysis and designed a hydrochemical sketch map of underground water of Zamyn-Uud Soum (M1:50 000).

Average hydrogeological indicators of watery stratum of Baruun Goyot early cretaceous period spread across the area of "Zamyn-Uud" FEZ:

Water transmission coefficient (km) –  $127.5 \text{ m}^2/\text{day}$

Level transmission coefficient ( $a_y$ ) –  $2.8 \times 10^5 \text{ m}^2/\text{day}$

Effluxion coefficient (K) –  $3.6 \text{ m}/\text{day}$ .

However, this watery stratum is very limited according to territorial spread.

If to use the watery stratum of early cretaceous period spread around Zamyn-Uud at  $600 \text{ m}^3/\text{day}$ , then it is estimated that it is sufficient for 27 years, however, based on current rate of water consumption in Zamyn-Uud Soum, which is  $1200\text{-}1400 \text{ m}^3/\text{day}$ , then the underground water is enough for some ten years. Besides, it should be noted here that the quality of the water fails to meet requirements of drinking water standard (MNS 900-2005) against several indicators.

Further, it is required to carry a mid-scaled hydrogeological surveying in the radius of 200 kilometers from Zamyn-Uud Soum, which will make it possible to solve water supply of "Zamyn-Uud" FEZ by compounding water-rich strips identified by previous surveys. Areas with underground water reserve found to date in Dornogobi Province:

- In 1989, a water source with the reserve of  $19 \text{ l}/\text{sec}$  or  $1641 \text{ m}^3/\text{day}$  located in Gashuunii Khondii, 100 kms to the north of Zamyn-Uud village, was evaluated on preliminary basis.
- A water source meeting drinking water quality requirement sufficient for 27 years, was discovered in a locality "Zeegiin Khutul", 185 kms to northwest of Zamyn-uud Soum, between 1983-1985. This is currently used for central water supply of Sainshad City.
- Between 1986 and 1988, a hydro survey was conducted in Bor Khuuvriin Gobi in Dornogobi Province and discovered a source with rich underground water reserve.
- As result of a survey purposed for water supply of fluorspar factory in Urgin Soum, Dornogobi Province in 1986, an underground water source was discovered in Shanagan Mogoit, 10 kms north to the soum.
- Between 1982 and 1989, a former Soviet Union hydrogeological expedition reportedly drilled a borehole in 150 kilometers to centre of Zamyn-Uud Soum.

## 2.2. Strategic and Final Goals and Objectives of "Zamyn-Uud" FEZ

### 2.2.1. Goal of "Zamyn-Uud" FEZ

Goal of "Zamyn-Uud" FEZ is to make real contribution to socio-economic development of Mongolia, through the development of a Free Economic Zone of international standards.

### 2.2.2. Objectives of "Zamyn-Uud" FEZ

*"Strategic objectives of "Zamyn-Uud" FEZ:*

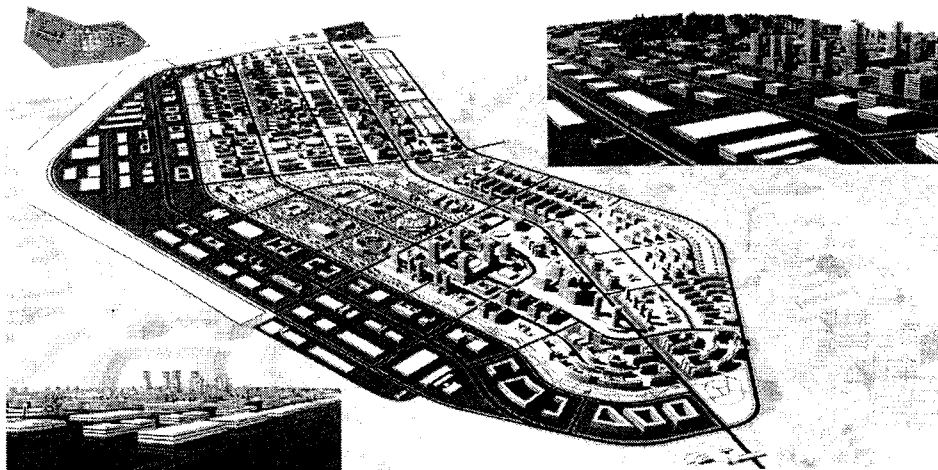
- Be a major and key exit to markets of China and Northeast Asia;
- Support the strengthening of competitiveness of Mongolia with respect to new production and service;
- Create new high speciality jobs in order to reduce unemployment and increase population income nationwide;
- With the purpose of intensifying the introduction and acclimatization of technology, attract foreign direct investment and encourage local entrepreneurs in production of non-traditional products in order to intensify technology transfer;
- Make it possible to test actions feasible in other economic fields;
- Build road transport network and engineering infrastructure required for the development of FEZ;
- Set up first-ever casino in Mongolia and develop tourism in this direction;

### 2.2.3. Types of activities in "Zamyn-Uud" FEZ

The Law on Legal Status of "Zamyn-Uud" Free Economic Zone envisages to develop the zone in three sections: industrial, commercial and tourism-service.

#### Industrial section

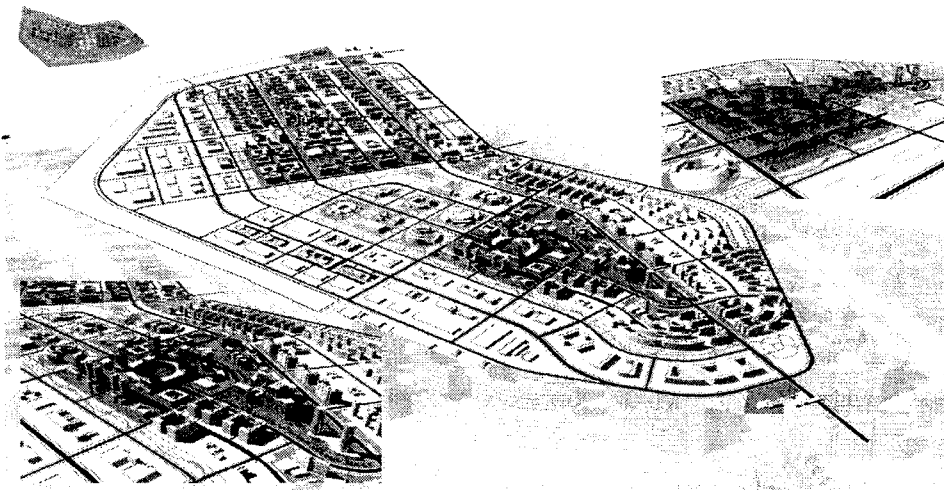
The industrial section includes assembly factories of audio & video appliances, home appliances, and electrical equipments and factories of textile, wooden goods and souvenir. These productions must be water efficient, soil and environment friendly, have high intellectual capabilities, high technology and export-oriented.



### *Outlook of Industrial Section of "Zamyn-Uud" FEZ*

#### Commercial section

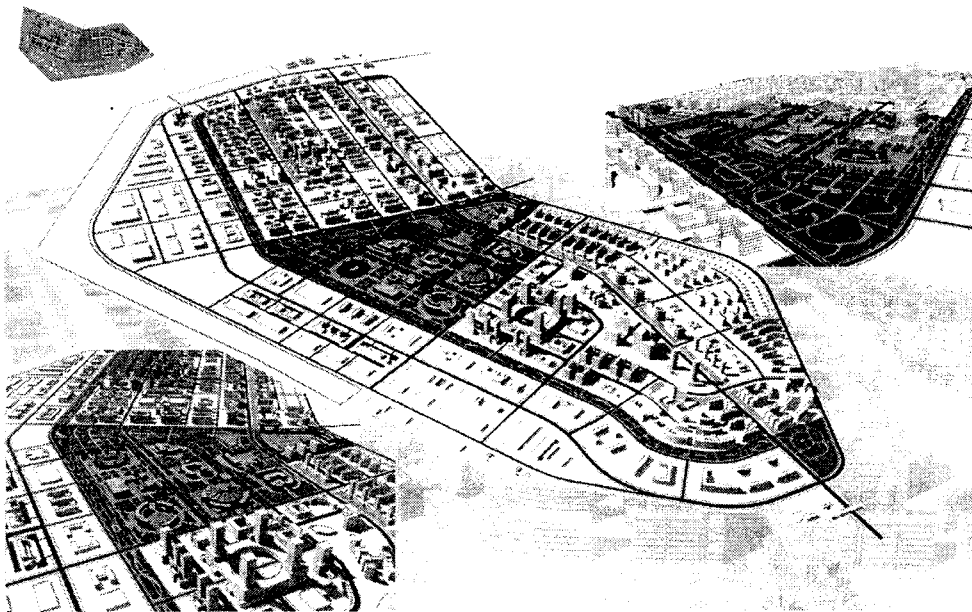
This section will include trade complex to host mostly stock exchange and exhibition, centralized warehouses, container dock (load & unload facility) and plus will render services such as sorting & packing, improving bags and packages. In addition, it is planned to build facilities of banking & financial institutions, communications and information.



*Outlook of commercial section of "Zamyn-Uud" FEZ*

#### Tourism-leisure section

Tour camps, hotels, residential apartments, restaurants, cafe, fastfood, mini golf ground, horse-racing ground, camel polo and entertainment facilities, as well as casino all will locate in this section.



*Outlook of Leisure section of "Zamyn-Uud" FEZ***THREE. NATURAL CONSERVATION**

In the course of improving the population livelihood under social development framework and boosting independent socio-economic development under economic development framework, it will be a priority to build an ecological framework to preserve nature and environment, support proper use of natural resources and take timely actions to rehabilitate damaged nature.

Trees will be planted in two or three lanes along the free zone border. Landscape gardening is planned in streets, roads, grounds, factories, warehouse, apartments and shopping centers of the zone. Seedlings suitable for soil of that area will be planted. Irrigation and maintenance of landscape will be solved by means of collection of rainwater and recycling of technical water.

To prevent the zone from desertification, landscape gardening is planned and trees (aspen, robinia) and fruit trees (seabuckthorn) and fast-growing decorative bushy plants will be planted in 5 or 6 lanes along railroad, autoroad, and along western and northwestern borders of the zone respectively, blocking the prevailing wind directions. It is planned to build a recycling factory on the east side of planned treatment plant, jointly with Zamyn-uud Soum.

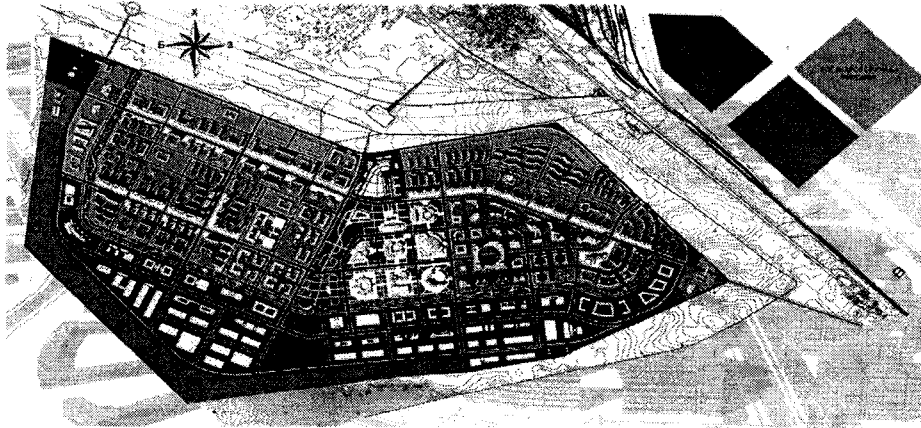
**FOUR. POPULATION AND SOCIAL INFRASTRUCTURE**

The population of the "Zamyn-Uud" FEZ is estimated to be 60.65 thousand people from 17.33 thousand families in the planned term or in 2029, of which 15.66 inhabitants of 4.4 thousand families are estimated to reside in 2019. Social infrastructure facilities like school, kindergarten and hospital with capacities appropriate to population number and demands stated in the master plan will be built by national, local and foreign and domestic investment. Capacity of such facilities is calculated according to planning norms and codes existing in Mongolia.

**FIVE. ARCHITECTURE-SPATIAL PLANNING*****5.1. Solutions of architecture-spatial planning***

As stated in the Law of Mongolia on "Zamyn-Uud" FEZ, a special border customs regime will be applied. According to plan, the Zone will have two entrances with border check, customs and professional inspection facilities, one entrance to the Zamyn-Uud village and one is to Erlian City, China. Further when Erlian City will build own FEZ, the third entrance leading to Erlian City and five more border check points will be available in the zone, as well asphalt road will be built to each entrance.

As to plan, "Zamyn-Uud" FEZ will be a densely populated town in 900 hectare land. To ensure effective use of granted area, it is planned to build office buildings, residential blocks, tourism facilities, international financial and commercial centers and industrial parks, all up to 25 storeys. Considering the limited area granted to the zone and impetus and contribution that the Zone will give to economic development of the country, it is planned that average storey of buildings will be 6.



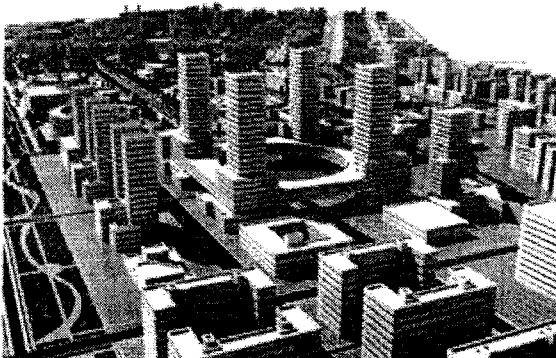
*Master plan of the "Zamyn-Uud" FEZ*

5.2. It is planned to connect main streets and main entrances of the zone by horizontal axis from east and west to the north and these street roads will be connected by second-grade roads from north to south.

Dependant on prevailing wind direction, it is planned that boulevard separating the industrial, warehouse and technological park zone from residential zone is a part of landscape gardening. Central part of the town is planned to host financial, commercial, business and tourism centers, as well residential microdistricts and social infrastructures. Commercial and service points will be situated on the first and second floors of building facilities located along main street road. Taking into account soil characteristics of the area on which the zone is built, underground garage for 11000 vehicles and engineering facility will be built.

With the purpose of supplying materials of production, equipment and ready products, railway station, container dock and auto stations are planned.

**Banking & Financial Center**



**Commercial Zone**

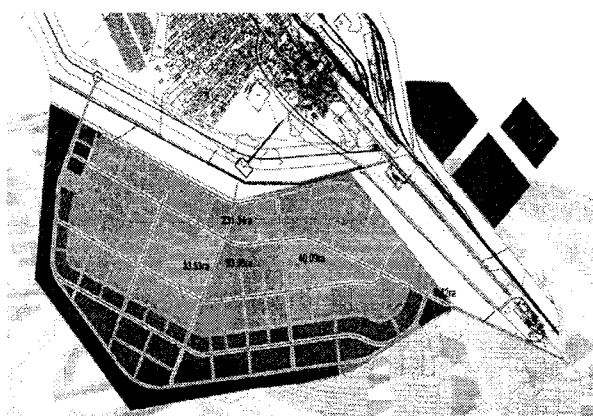


*General outlook of the "Zamyn-Uud" FEZ*

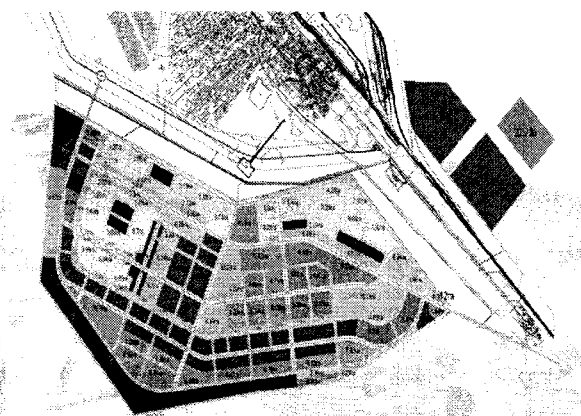
### 5.3. Land use, designation, zoning.

Territory of the "Zamyn-Uud" FEZ is divided into six basic zones and 22 sub-zones according to their designation and type. The basic zones include:

1. Free trade zone
2. Leisure zone
3. Industrial zone
4. Residential zone
5. Special purpose zone
6. Engineering infrastructure & road transport zone



*Basic zoning*



*Land use*

#### Ratio of land use

No	Zoning code	Basic zones	Sub-zones	Area /hectare/	Area /%/
1	RH	Residential and public zone	Residential zone	119.44	13.27
2	CB		Trade-business zone	7.93	0.88
3	C		Mixed zone	65.22	7.25
4	SC		Social infrastructure	19.11	2.12
5	Sw		Administrative zone	10.4	1.16
6	REC	Landscape, leisure, entertainment and tourism zone	Leisure zone, casino	35.54	3.95
7	G		Landscape	58.62	6.51
8	IN	Industrial zone	Industrial zone	75.69	8.42
9	D		Storage zone	69.16	7.68
10	EC	Engineering network and road transport	Engineering infrastructure	9.52	1.06
11	RSt		Railway station	4.75	0.53
12	Ast		Auto station	14.4	1.6
13	RZ		Railroad zone	61.14	6.79

14	Cus		Border customs check	16.6	1.84
15	CT		Load & Unload dock	14.61	1.62
16	STP		Scientific & technological park	7.05	0.78
17	ITP		IT Park	8.3	0.92
18	F		Gas station	2.38	0.26
19	S		Street, road grounds	214.16	23.8
20	FC	Free trade zone	Free trade zone	33.53	3.73
21	IB		Int'l business zone	40.15	4.46
22	SG	Green strip of protective zone		12.3	1.37
<b>Total</b>				<b>900</b>	<b>100</b>

### Street, road, transport network

Though the Free Zone is required to have railroad, autoroad and air transport networks depending on its location and type of business activity, it is planned that the autoroad will be a primary transport mean in the zone due to technical conditions of the site area.

It is planned to use railroad transportation in the territory of the Zamyn-Uud Free Economic Zone on a long-term basis.

As the land granted for establishing the free zone, is limited in size, it is appropriate to build an airport beyond the territory of the free zone and it is proper to make a separate feasibility study for this airport project.

The location of the Choir – Zamyn-Uud International Auto Road to pass through the Zamyn-Uud Soum and the FEZ is solved according to drawings prepared by "MCPCgr" LLC. This road is to become a key hub of freight and passenger transport and a professional inspection center is planned in main gates on northwest and southeast. Auto passenger station is planned as a complex with railroad station.

Since the land granted for the establishment of the free zone is limited in size, it is appropriate to build an airport outside the territory of the free zone, northwest to the zone. The planned street network is categorized into three types: main street of city, main street of district and internal road and street of district. The redline of free zone's main street is 40 meters, carriageway width is 15 meters in total and will have two directions with two lanes each. Width of one direction is 3.75 meters and total length of the road is 5.7 kilometers. This road is planned to be built in Phase 1. District main street length is 22.4 meters in total. Of that, 9.5 km long district's main street will be built in the Phase 1. The redline of district's main street is 40.0 m, carriageway width is 14 m and will have two directions with two lanes each and the strip width is 3.5 meters.