

7. Conclusions

The two tables below summarise ITER site requirements and assumptions (see their detailed description in chapter 2.5), with the situation of Cadarache. The corresponding chapter of the present document where information is detailed is indicated for each item.

7.1. ITER site requirements and design assumptions

7.1.1. Requirements

	ITER Generic site	Cadarache
A. Land		
[SR.A1]	Land area: 40 hectares available for at least 30 years	180 ha are available on the selected site Chapter 3.2
[SR.A2]	Geotechnical: 25 t/m ² for buildings, 65 t/m ² to 25 m for Tokamak building	Requirements satisfied Chapter 3.2 Note 1
[SR.A3]	Water supply: 0.2 m ³ /minute average, 3 m ³ /minute peak, daily average 200 m ³	Requirements will be satisfied Chapter 3.4 Note 2
[SR.A4]	Sanitary waste 1000 people, industrial waste 200 m ³ /day	Requirements will be satisfied Chapter 3.2 & 3.4 Note 2
B Heat Sink		
[SR.B]	Average 450 MW (thermal) energy to environment	Requirements satisfied Chapter 3.4
C Energy & Electrical Power		
[SR.C]	120 MW continuous electrical power, 2 connections to be provided to site, no interruptions due to maintenance	Requirements will be satisfied Chapter 3.5
D Transport & Shipping		
[SR.D1]	Maximum size of components: width 9 m, height 8 m, length 15 m	Requirements satisfied Chapter 3.6
[SR.D2]	Maximum weight: 12 packages of maximum 600 t, 100 packages over 100 t	Requirements satisfied Chapter 3.6
G Regulatory & Decommissioning		
[SR.G]	Depending on host country, practicable licensing frame work has to exist to permit ITER to be build and operated, off-site matters: tritium transport storage activated	Requirements satisfied Chapter 4.14.2

D Transport and shipping		
[SA.D1]	Highway transport: ITER site accessible by major highway connecting to major ports of entry and centres of commerce	Motorways and national roads Chapter 5.3.1
[SA.D2]	Air transport: ITER site located within reasonable commuting time from airport with connections to international air service	Less than 1 hour to international airport (2 hrs to 2 nd int. airport) Chapter 5.3.1
[SA.D3]	Rail and waterway transport: ITER site will have rail and waterway access. Railway is assumed to connect to major manufacturing centres and ports of entry.	Available Chapter 3.6 & 5.3.1
E External hazards and accident initiators		
[SA.E1]	External hazards: ITER site not subject to significant industrial and other man-made hazards	Assumption met Chapter 4.2.2
[SA.E2]	External (natural) accident initiators: see chapter 2.5.4 for details	Assumption met Chapter 4.2.2
F Infrastructure		
[SA.F1]	Industrial: access to industrial infrastructure, manufacturing resources and materials, see chapter 2.5.4 for details	Assumption met Chapter 5.3
[SA.F2]	Workforce: competent operating and scientific workforce can be recruited or can be relocated to neighbouring communities	Assumption met Chapter 5.3
[SA.F3]	Socio-economic infrastructure: communities not further than 50 km from site with socio-economic infrastructure, see chapter 2.5.4 for details	Assumption met Chapter 5.3
G Regulatory and decommissioning		
[SA.G1]	General decommissioning: Dismantling of ITER responsibility of new organisation within host country	Wide experience available Chapter 0
[SA.G2]	ITER plant deactivation work: see chapter 2.5.4 for details	Existing capabilities adequate Chapter 0
H Construction Phase		
[SA.H]	Water, sewage and power supplies for construction force of up to 3000 people	Assumption will be met Chapter 3.2 Note 2

Notes and comments:

1. A geotechnical study is currently underway for the selected site. The site could be moved by some tens of meters to optimise the location in view of the results of these studies. The soil characteristics will be known and used for further design of the building foundations.

2. Although these site requirements and design assumptions are not satisfied at the moment since they serve no purpose, the solutions will be easy to implement once needed.
3. Since the natural ground is hilly buildings are implemented on three different platforms to reduce the overall excavation. Nevertheless, the nuclear buildings will have their foundations on limestone. Platform 1 (306 m) control room, pumping station, site services building and emergency power supply; platform 2 (320 m) cooling towers; platform 3 (310 m) all other buildings.
4. The topsoil is partially alluvia. The site will be prepared with the creation of three platforms (see note 3).
5. The French Safety Regulations require taking into account the actual seismic conditions at Cadarache, which are slightly higher than those taken for the generic site. The impact is rather minimal and the induced extra cost will be reasonable.
6. The maximum air temperature has been 40.1°C over 40 years. This has a minor impact on the design of the cooling towers.
7. The maximum relative humidity is 100% in Cadarache. This has no significant impact since this humidity only occurs during limited periods when the temperature is low.
8. Due to the fact that the Cadarache site is located far from the electrical power stations, an additional voltage drop will need to be installed. The associated extra costs will be small.

7.2. Conclusion of the first phase of studies

In conclusion, Cadarache fulfils all ITER site requirements.

Most of ITER generic design assumptions are already fulfilled, and when differences exist, an evaluation of the additional work has been made. The resulting site-specific cost for the construction phase, inside and outside the fence, is low (less than 3 % of ITER investment cost).

Cadarache appears to be remarkably suited to host ITER: the site has considerable experience in dealing with nuclear installations and hosts broad expertise on magnetic fusion research.