

FORM-1-A

JURS COUNTRY

At

**The Vardhman Developers
Khasra No. 1081 to 1085, 1087, 1103 to 1108 &
1112 to 1114, Gram Jawalpur, Haridwar (U.K)**

APPENDIX II

(See paragraph 6)

FORM-I A (only for construction projects listed under item 8 of the Schedule) CHECK LIST OF ENVIRONMENTAL IMPACTS

(Project proponents are required to provide full information and wherever necessary attach explanatory notes with the Form and submit along with proposed environmental - management plan & monitoring programme)

1. LAND ENVIRONMENT

(Attach panoramic view of the project site and the vicinity) (Photograph enclosed)

- 1.1. Will the existing land use get significantly altered from the project that is not consistent with the surroundings? (Proposed land use must conform to the approved Master Plan / Development Plan of the area. Change of land use if any and the statutory approval from the competent authority be submitted). Attach Maps of (i) site location, (ii) surrounding features of the proposed site (within 500 meters) and (iii) the site (indicating levels & contours) to appropriate scales. If not available attach only conceptual plans.

No, the existing land will not be changed as per local land use plan. The proposed project is the construction of multistory residential complex over a land of 63800.02 sqm. The Project is developing as per Haridwar Development authority by laws.

- 1.2. List out all the major project requirements in terms of the land area, built up area, water consumption, power requirement, connectivity, community facilities, parking needs etc.

Land Area	-63800.02 sqm
Built up Area	- 90292.22 sqm (From Ground Floor to Seven Floor)
Water Consumption	- 472 KLD (After Completion of Project)
Power Requirement	- 2600 KVA
Road & Parking Area	- 31506.22 sqm
Connectivity	- By Road from Haridwar & Delhi Highway
Community Facilities	-Water Supply, Power Supply, Power backup, Lift, Lawn, STP, club house small shopping area security office and Maintenance office etc.

- 1.3. What are the likely impacts of the proposed activity on the existing facilities adjacent to the proposed site? (Such as open spaces, community facilities, details of the existing land use, disturbance to the local ecology).

The probable impacts due to the proposed multi story housing project on existing facility will be both short term and long term in nature. About 10720.89 sqm area will be developed as green area and will have positive impact on the surrounding.

- 1.4. Will there be any significant land disturbance resulting in erosion, subsidence & instability? (Details of soil type, slope analysis, vulnerability to subsidence, seismicity etc may be given)

There will be no land disturbance due to the project. Soil testing was carried out at project site to assess the soil quality and the result will be categorized in seismic intensity Zone IV, which is classified as having high.

- 1.5. Will the proposal involve alteration of natural drainage systems? (Give details on a contour map showing the natural drainage near the proposed project site)

No alteration of natural drainage system and topography is envisaged, since the site is a flat and barren land.

- 1.6. What are the quantities of earthwork involved in the construction activity-cutting, filling, reclamation etc. (Give details of the quantities of earthwork involved, transport of materials from outside the site etc.)

The proposed project is multi story residential complex project. There will be two basements and excavated earth fill is approximately 22500 cum, which is used for leveling of site.

- 1.7. Give details regarding water supply, waste handling etc during the construction period.

Water will be taken from Ground water for construction and operational purposes and waste water will be utilized for the development of green area, road & parking area.

- 1.8. Will the low lying areas & wetlands get altered? (Provide details of how low lying and wetlands are getting modified from the proposed activity)

No low lying or wetlands areas are found in the vicinity of the project.

- 1.9. Whether construction debris & waste during construction cause health hazard? (Give quantities of various types of wastes generated during construction including the construction labour and the means of disposal)

The construction wastes will not cause any health hazard. Solid waste during the construction phase would comprise mainly of excavated earth, concrete debris, steel scarp, insulation material for air-conditioning and packing material. The top soil will be reclaimed, temporarily stored and further used for green area development. Surplus earth will be used for back filling. Cement bags and waste paper, cardboard packing material and unusable steel scrap will be collected at site and sold to authorized recyclers/vendors.

2. WATER ENVIRONMENT

2.1. Give the total quantity of water requirement for the proposed project with the breakup of requirements for various uses. How will the water requirement met? State the sources & quantities and furnish a water balance statement.

During construction phase, 75 KLD water will be consumed for the various types of activities including drinking water for construction team.

2.2. What is the capacity (dependable flow or yield) of the proposed source of water?

Water will be abstracted from ground with submersible pump having capacity 15 HP.

2.3. What is the quality of water required, in case, the supply is not from a municipal source? (Provide physical, chemical, biological characteristics with class of water quality)

Water quality analysis will be done shortly.

2.4. How much of the water requirement can be met from the recycling of treated wastewater? (Give the details of quantities, sources and usage)

During the operational stage at the proposed site, the wastewater will be treated up to tertiary level in a Sewage Treatment Plant (STP) of 500 KLD capacity. Treated water of 377 KLD will be reused and recycled in flushing and gardening and remaining will be sold to farmers for irrigation/building and contractors for construction.

2.5. Will there be diversion of water from other users? (Please assess the impacts of the project on other existing uses and quantities of consumption)

No diversion

2.6. What is the incremental pollution load from wastewater generated from the proposed activity? (Give details of the quantities and composition of wastewater generated from the proposed activity)

Maximum 377 KLD of treated wastewater will be generated from proposed project.

2.7. Give details of the water requirements met from water harvesting? Furnish details of the facilities created.

For 250 sq.M covered area	= 2.0 cubic meter
$\frac{(3305.13-250)}{50}$	= 61.10 unit
	= 61.10x5+2
Capacity required	= 32.55 cubic meter
Provided	
5.00x3.0x2.50	= 37.50 cubic meter

2.8. What would be the impact of the land use changes occurring due to the proposed project on the runoff characteristics (quantitative as well as qualitative) of the area in the post construction phase on a long term basis? Would it aggravate the problems of flooding or water logging in any way?

There will be no impact on the runoff characteristics due to the proposed project.

2.9. What are the impacts of the proposal on the ground water? (Will there be tapping of ground water; give the details of ground water table, recharging capacity, and approvals obtained from competent authority, if any)

Ground water will be taken and all necessary measures will be adopted for recharging the water table in accordance with the law of CGWB.

2.10. What precautions/measures are taken to prevent the run-off from construction activities? polluting land & aquifers? (Give details of quantities and the measures taken to avoid the adverse impacts)

During construction phase, on site sanitation facilities will be provided and water will be reused and disposal into septic tanks followed by soak pits. Precaution will be taken for wastewater collection and disposed so that overflow will be negligible.

2.11. How is the storm water from within the site managed?(State the provisions made to avoid flooding of the area, details of the drainage facilities provided along with a site layout indication contour levels)

During the operation stage, the storm water will be collected into the surface drainage network inside the project premises. The drain sizes and sections will be designed in such a way that they can take the load of the peak rainfall period. The entire surface drains will be covered by gratings. Proper land gradient will be provided so that water logging inside the campus does not occur. Collected water will be recharged into ground water.

2.12. Will the deployment of construction laborers particularly in the peak period lead to unsanitary conditions around the project site (Justify with proper explanation)

The construction laborers will be hired from local area. During construction phase, on site sanitation facilities will be provided. All the basic facilities will be provided to laborers.

2.13. What on-site facilities are provided for the collection, treatment & safe disposal of sewage? (Give details of the quantities of wastewater generation, treatment capacities with technology & facilities for recycling and disposal)

During the construction phase, on-site sanitation facilities will be provided (septic tanks and soak pits).

2.14. Give details of dual plumbing system if treated waste water is used for flushing of toilets or any other use.

Dual plumbing system will be implemented separately for WC and Bathing facilities

3. VEGETATION

3.1 Is there any threat of the project to the biodiversity? (Give a description of the local ecosystem with its unique features, if any)

No. this project will not pose any threat to the biodiversity of the locality. Also as the project site does not contain any water body, therefore, no scope of disturbance to aquatic flora involved. Moreover, quite a number of trees are also going to be planted during the later period of construction stage. The species will be predominantly native in nature so that they merge with the local ecosystem.

3.2. Will the construction involve extensive clearing or modification of vegetation? (Provide a detailed account of the trees & vegetation affected by the project)

There will be minimal damage to the floral diversity and every precaution will be taken to preserve them. There will be development of greenbelt in the project.

3.2 What are the measures proposed to be taken to minimize the likely impacts on important site features (Give details of proposal for tree plantation, landscaping, creation of water bodies etc along with a layout plan to an appropriate scale?)

Adequate measures will be taken to minimize the likely impact of the proposed project on the surrounding as well as the project site itself and documented in the Environmental Management Plan.

4. FAUNA

4.1 Is there likely to be any displacement of fauna- both terrestrial and aquatic or creation of barriers for their movement? Provide the details.

No scope of displacement of terrestrial as well as aquatic fauna is involved due to the proposed project.

4.2. Any direct or indirect impacts on the avifauna of the area? Provide details.

No direct and indirect adverse impact is envisaged to fauna due to the project.

4.3. Prescribe measures such as corridors, fish ladders etc to mitigate adverse impacts on fauna

Not applicable.

5. AIR ENVIRONMENT

- 5.1. Will the project increase atmospheric concentration of gases & result in heat islands? (Give details of background air quality levels with predicted values based on dispersion models taking into account the increased traffic generation as a result of the proposed constructions)

The proposed project is multi story housing. During the operational stage of the project, there is no constant source of emission from the building, as mostly no polluting activities will be carried out. The only source of air pollution is vehicular movement in and around the project premises and emission from DG sets.

- 5.2. What are the impacts on generation of dust, smoke, odorous fumes or other hazardous gases? Give details in relation to all the meteorological parameters.

During the construction stage of the project, there will be generation of dust, which is controlled by sprinkling of water, covering building materials by tarpaulin, covering the structure with Hessian clothe etc. Gases generation during the construction and operation stages of the project are below the specific limit as norms.

- 5.3. Will the proposal create shortage of parking space for vehicles? Furnish details of the present level of transport infrastructure and measures proposed for improvement including the traffic management at the entry & exit to the project site.

31506 Sq. M land has been reserve for parking.

- 5.4. Provide details of the movement patterns with internal roads, bicycle tracks, pedestrian pathways, footpaths etc., with areas under each category.

The area is very small so no separate path has been proposed for bicycle tracks however separate footpath has been proposed.

- 5.5. Will there be significant increase in traffic noise & vibrations? Give details of the sources and the measures proposed for mitigation of the above.

Minimum increase in noise due to vehicular movement on the surrounding area DG set. Acoustic enclosure will be used for minimizing noise. Trained staff will be employed for managing traffic flow.

- 5.6. What will be the impact of DG sets & other equipment on noise levels & vibration in & ambient? air quality around the project site? Provide details.

DG set will be acoustically insulated with proper canopy.

6. AESTHETICS

- 6.1. Will the proposed constructions in any way result in the obstruction of a view, scenic amenity or landscapes? Are these considerations taken into account by the proponents?

Scenic amenity or landscapes has been taken in to account and no obstruction will be seen.

- 6.2. Will there be any adverse impacts from new constructions on the existing structures? What are the considerations taken into account?

This will be entirely new construction and will not have any adverse impact on the existing structures.

- 6.3. Whether there are any local considerations of urban form & urban design influencing the design criteria? They may be explicitly spelt out.

Land use and design as per Haridwar Development Authority.

- 6.4. Are there any anthropological or archaeological sites or artifacts nearby? State if any other Significant features in the vicinity of the proposed site have been considered.

No, there are no archaeological sites observed within the study area.

7. SOCIO-ECONOMIC ASPECTS

- 7.1. Will the proposal result in any changes to the demographic structure of local population? Provide the details.

Limited change in the local demographic structure is envisaged for the project due to Employment opportunities.

- 7.2. Give details of the existing social infrastructure around the proposed project.

There are basic social infrastructure like roads, hospitals, schools and human Settlements available around the proposed project.

- 7.3. Will the project cause adverse effects on local communities, disturbance to sacred sites or other cultural values? What are the safeguards opposed?

It will not be create any disturbance to the local people rather many of the local people will get the benefit with interaction with this project.

8. BUILDING MATERIALS

- 8.1. May involve the use of building materials with high-embodied energy. Are the construction materials produced with energy efficient processes? (Give details of energy conservation measures in the selection of building materials and their energy efficiency)

The concept of 'embodied energy' originates from designing more sustainable buildings. Embodied energy is a significant component of the lifecycle impact of buildings. Every building is a complex combination of many processed materials, each of which contributes to the building's total embodied energy. Renovation and maintenance also add to the embodied energy over a building's life.

- 8.2. Transport and handling of materials during construction may result in pollution, noise & public nuisance. What measures are taken to minimize the impacts?

Transportation of raw material will cause impacts for short-terms only. The air pollution will be minimized by water sprinklers and by covering the vehicles during transport. The trucks used for transport will be thoroughly checked for emission parameters and will be properly maintained. The raw materials transport will be avoided during the peak hours to reduce traffic load.

- 8.3. Are recycled materials used in roads and structures? State the extent of savings achieved?

Recycled material will be used in roads.

- 8.4. Give details of the methods of collection, segregation & disposal of the garbage generated during the operation phases of the project.

During the operation phase, solid wastes will mainly food waste and recyclable waste. The solid waste will be segregated into biodegradable waste and recyclable waste. The recyclable waste will be sold off to authorized recyclers. The biodegradable waste will be collected in different bins and composted. Dewatered/dried sludge from STP will be used as manure in horticulture.

9. ENERGY CONSERVATION

- 9.1. Give details of the power requirements, source of supply, backup source etc. What is the energy consumption assumed per square foot of built-up area? How have you tried to minimize energy consumption?

Total power requirement is 2600 KVA whereas power backup for emergency services will be provided by two number DG sets having capacity 2 X 250 KVA

- 9.2. What type of, and capacity of, power back-up to you plan to provide?

D.G set 2 X 250KVA as power backup for essential services only.

9.3. What are the characteristics of the glass you plan to use? Provide specifications of its characteristics related to both short wave and long wave radiation?

GLASS CHARACTERISTICS

Physical Properties		Condition	Unit	LSL/LGSL	LQ1
Thermal Properties	Thermal Expansion	50°C-200°C	$10^{-7}/K$	93	5
	Annealing point		°C	520	1065
Optical Properties	Refractive Index		n_d	1.52	1.64
Chemical Durabilities	Weight loss	DI water 100°C, 1h	%	0.058	0.0
	Weight loss	0.01 N HNO ₃ 100 °C, 1h	%	0.023	0.0
	Weight loss	5% NaOH 80°C, 1h	Mg/mm ²	0.14	0.17
Mechanical Properties	Specific Gravity		g/cm ³	2.54	2.20
	Knoop Hardness		N/mm ²	5300	6150
	Young's modulus		GPa	65.3	70
	Shear Modulus		GPa	29	30
	Poisson's Ratio			0.23	0.17
Electrical Properties	Bulk Resistivity	T=20°C	Ωcm	10 ₁₅	10 ¹⁸

Reflective glass and ventilation in the building is kept good. Orientation of the building is such that there is maximum light during the day.

9.4 What passive solar architectural features are being used in the building? Illustrate the applications made in the proposed project.

Design features

Air heating panels designed as an integral part of the south wall provide effective heat gain. Distribution of heat gain in the building through a connective loop that utilizes the stairwell as a means of distributing heated air

Double-glazed windows with proper sealing to minimize infiltration

Insulated RCC diaphragm walls on the north to prevent heat loss

Solar chimney

Specially designed solarium on south for heat gain

Careful integration of windows and light shelves ensures effective daylight distribution

Solar water heating system and solar photovoltaic system

9.5 Does the layout of streets & buildings maximize the potential for solar energy devices? Have you considered the use of street lighting, emergency lighting and solar hot water systems for use in the building complex? Substantiate with details.

Proposed design of buildings has all the energy saving features.

9.6. Is shading effectively used to reduce cooling/heating loads? What principles have been used to maximize the shading of Walls on the East and the West and the Roof? How much energy saving has been effected?

Passive solar systems utilize basic concepts incorporated into the architectural design of the building. They usually consist of: buildings with rectangular floor plans, elongated on an east-west axis; a glazed south-facing wall; a thermal storage media exposed to the solar radiation which penetrates the south-facing glazing; overhangs or other shading devices which sufficiently shade the south-facing glazing from the summer sun; and windows on the east and west walls, and preferably none on the north walls.

9.7 Do the structures use energy-efficient space conditioning, lighting and mechanical systems? Provide technical details. Provide details of the transformers and motor efficiencies, lighting intensity and air-conditioning load assumptions? Are you using CFC and HCFC free chillers? Provide specifications.

Not Applicable.

9.8 What are the likely effects of the building activity in altering the micro-climates? Provide a Self-assessment on the likely impacts of the proposed construction on creation of heat island & inversion effects?

No adverse impact.

9.9. What are the thermal characteristics of the building envelope? (a) roof; (b) external walls; and (c) fenestration? Give details of the material used and the V-values or the R values of the individual components.

	External Wall/Roof Surface	'R' Values (in Sq. M. Deg K/Watts)	'U' Values (in watts/Sq.m Deg K)
Wall	Brick wall (230 mm thick Brick wall 20 mm thick plaster Texture Paint	2.27	0.44
Glass	5mm thick glass in Window Curtain Wall-10mm thick glass (Reflective glass)	0.43	2.32

Roof	R.C.C. Roof-water proofing Brick Coba	2.21	0.409
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9.10. What precautions & safety measures are proposed against fire hazards? Furnish details of emergency plans.

Fire NOC has been obtained from Fire Department District Haridwar and all the conditions form given the NOC will be complied.

9.11. To what extent the non-conventional energy technologies are utilized in the overall energy consumption? Provide details of the renewable energy technologies used.

Solar Energy will be utilized to save electricity up to 10%.