Naoshima-cho hazard map

Revised 2024 Special Edition

Earthquakes, tsunamis, storm surges, landslides, etc.



Naoshima-cho has made this Naoshima-cho hazard map for you to use as an everyday precaution against earthquakes, tsunamis, storm surges, landslides, and other natural disasters.

The map contents contain information on predicted flood areas when tsunamis / storm surges occur, areas that have a possibility of landslides occurring due to heavy rain or earthquakes, etc., as well as evacuation facilities and elevated areas, etc., to evacuate to when disasters occur. (This revised edition adds information on map of the areas estimated to experience flooding during storm surges, etc.)

We never know when or where a natural disaster might strike. In order to quickly and safely evacuate when disasters occur, we must have an understanding in our daily lives as to "the features of the region we live in" and confirm in advance the nearest evacuation facilities and other places to evacuate, so we can be prepared when disaster strikes.

1 With the Naoshima-cho hazard map...

"Naoshima-cho hazard map" shows on the map a place expected to be damaged by a disaster such as typhoon, heavy rain, tsunami and the location of shelter.

This map compiles and displays information on areas estimated to be hit when a natural disaster occurs - including "areas estimated to be flooded during tsunamis," "areas estimated to be flooded during storm surges," "hazard areas during landslide disasters," and "special hazard areas during landslide disasters." It also displays the areas flooded by storm surges during Typhoon No. 16 in 2004, in addition to "designated evacuation centers" and "evacuation areas such as elevated regions for escaping from tsunamis" and so on in each area.

2 How to Use these hazard maps

These maps lets you know in advance areas that are estimated to be hit when various kinds of natural disasters occur. It has been made with the aim of you to be prepared for natural disasters.

In preparation for those critical moments when disaster strikes, you should always check the nearest evacuation areas and evacuation routes from your home, and emergency contact information, etc.

Please also use these maps to improve your everyday disaster awareness and as regional disaster prevention training, etc. This includes mutually checking areas estimated to be hit and evacuation centers near your home and contact methods, etc. in an emergency while looking at these maps with your family, neighbors, and friends and others.

During heavy rains and typhoons, you should make special efforts to check weather information and the status of nature areas around you. Reach out to your neighbors, and if you feel the slightest bit of danger, prepare to quickly evacuate using your own judgement after confirming the situation that each person has been placed in.

Based on evacuation information such as weather information announced by the Japan Meteorological Agency and Alert levels issued by Naoshima-Cho, you should quickly evacuate to a safe location.

Evacuation locations are not just limited to evacuation facilities and locations designated by the town. Consult with nearby relatives and acquaintances, etc., in your daily life regarding using their homes for evacuation.

In addition, when sufficiently ensuring the safety of a location, evacuating to 2F of a home or the upper level of a building, etc., is also effective.

Alert Level	Status	Actions town residents should take	Information that spurs action
5	Natural disaster occurring or imminent	Your life is in danger Quickly ensure your safety!	Emergency safety measures
4	High risk of natural disaster	Everyone should evacuate from the dangerous area	Evacuation instructions
3	Risk of natural disaster	Elderly residents, etc., should evacuate from the dangerous area Evacuation of elderly re	

How to read the hazard map

1) Tsunami inundation map

According to the Kagawa prefecture tsunami damage prediction survey result, the tsunami of this time.

The assumption of flood prediction is

1. Earthquake occurred on the scale of moment magnitude (Mw) 9.1

2. "High class tsunami *1" attacks at high tide

When it's attacked, the inundation forecast area in the land section is displayed, and the depth of the flood is also in the land parts except the coast etc. There are places that are expected to be around 2 m.

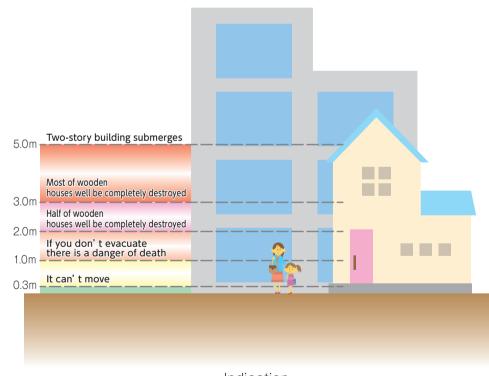
 $\%1\cdots$ "Tsunami of the largest class" means that the occurrence frequency is extremely low, but if it occurs,

According to the earthquake / tsunami damage hypothesis announced by Kagawa

prefecture in March, $2013,\pm20$ cm Sea level change start time is about 30 minutes earlier than the occurrence of the earth-quake, The maximum tsunami arrival time is expected to be about 200 minutes after the earthquake occurred. It is the largest class tsunami that brings about the current tsunami based on the current scientific knowledge, from the tsunami that occurred in the past and the tsunami that is expected to occur in the future.

Maximum tsunami water level prediction

[Tsumuura fishing port ...2.4 m above sea level]
[Naoshima (Honmura) Port ...2.7 m above sea level]
[Miyanoura Port ...3.1 m above sea level]



Indication

Flood inundation caused by the tsunami and the like, such as local unevenness of the ground, the influence of the building, ground fluctuation due to the earthquake, structural change of the structure, etc., flooding occurred even outside the flooded prediction area, Please note that it may become even larger.

*2···The results of this Kagawa prefecture forecast the flood damage of the tsunami on the assumption that the largest tsunami will come. However, if the magnitude or occurrence of the actual earthquake changes, the actual damage of the tsunami will also change significantly

This map displays both areas predicted to be flooded and evacuation locations, etc., such as elevated areas, for evacuating from tsunami floods.

The tsunami will attack after being damaged by the earthquake. Even if you feel that there is time until the arrival of the tsunami by the prediction of the prefecture, you actually injured yourself

It may take time to rescue families or neighbors, the road may be obstructed by house collapse, fire, etc., so evacuation is opened

There is a possibility that there is not much time left when I start.

Evacuation from the tsunami is not "far away" but "to a higher place" is the basis.

Normally, near home, school, workplace, school road and commuting road

When confirmed the open spaces such as empty lands located in a small elevated place and the precincts of a shrine and warnings on tsunami are issued, evacuation promptly.

3 How to read the hazard map

② Sediment-related disaster warning area / special alert area

This is to let the residents know that there is a danger of sediment-related disasters, prompt It was designated for you to evacuate.

"Sediment-related disaster warning area" is an area where there is a risk of landslides and debris flows.

"Sediment-related disaster special warning area", even in the warning area, the building was destroyed by debris flow great damage It is an area where it is likely to occur.

Residents of this area should keep in mind that they should pay attention to heavy rain warnings and alert information on landslides and information regarding evacuations announced by Naoshima-Cho, and that they should take "precautions in their daily lives" and "evacuate quickly" to places outside of hazard areas during landslide disasters that are even a bit safer, in order to protect themselves. In addition, we implement a licensing system and building construction regulations, etc., for specific development activities in these areas.

Sediment-related disaster warning area

Areas where there is a danger of sediment-related disasters

Sediment-related disaster special warning area

Areas in which buildings are destroyed and there is a risk of major damage to residents

Map of the areas estimated to be flooded during storm surges

Until now we have published only areas hit by floods during the storm surges of Typhoon No. 16 in 2004, which caused large-scale damage in Naoshima-Cho. However, based on the revisions in the Flood Control Act in 2015, Kagawa Prefecture has made a map of the areas estimated to be flooded by storm surges on a larger scale than previously experienced (annual probability assessment 1/500 – 1/thousands of years), and published in March 2021. The contents are as follows.

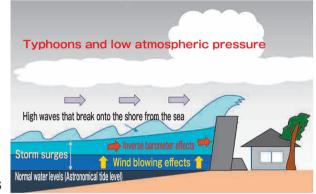
- This area map indicates areas that are estimated to be flooded when a flood occurs due to the largest-scale storm surges imaginable by the provisions of the Flood Control Act.
- In the creation of this map of areas estimated to be flooded during storm surges, the worst case scenario is assumed. It sets several path of typhoons in each area in the prefecture based on the Muroto typhoon (919hPa), the largest typhoon to ever arrive in Japan, and the movement speed of the Isewan typhoon (73km/h). Embankments and flood gates, etc., are implemented in this simulation as objects that are completely destroyed at the stage of design conditions being achieved.
- The largest flood areas are extracted from the results of these several flood tide flood simulations and indicated on the map.
- Floods can occur and become more severe outside the areas expected to be flooded. This includes rugged local ground and impacts on buildings that cannot be recreated in flood tide flood simulations, and the occurrence of rainwater floods (inland waters) and so on that are not expected.
- These are set from typhoons that occurred in the past and are based on current scientific opinions. It does not mean that larger storm surges will not occur in the future.
- In addition to the map of areas estimated to be flooded during storm surges, the areas flooded during the storm surges of Typhoon No. 16 in 2004 are continually published here.

Mechanism behind Storm surges generation

Storm surges are a phenomenon in which sea levels around the coasts become extremely high due to typhoons or low atmospheric pressure that has developed. The main factors that cause storm surges are shown in the illustration on the right.

Because the central pressure of typhoons and low atmospheric pressure is lower than the surrounding area, the air from the surrounding area pushes up the sea levels, and the air near the center acts to suck up the sea level, which raises the sea level.

If strong winds such as typhoons continue to blow over long periods of time from the sea towards the coast, seawater is blown onto the coast, causing the sea levels near the coast to rise to abnormal levels.



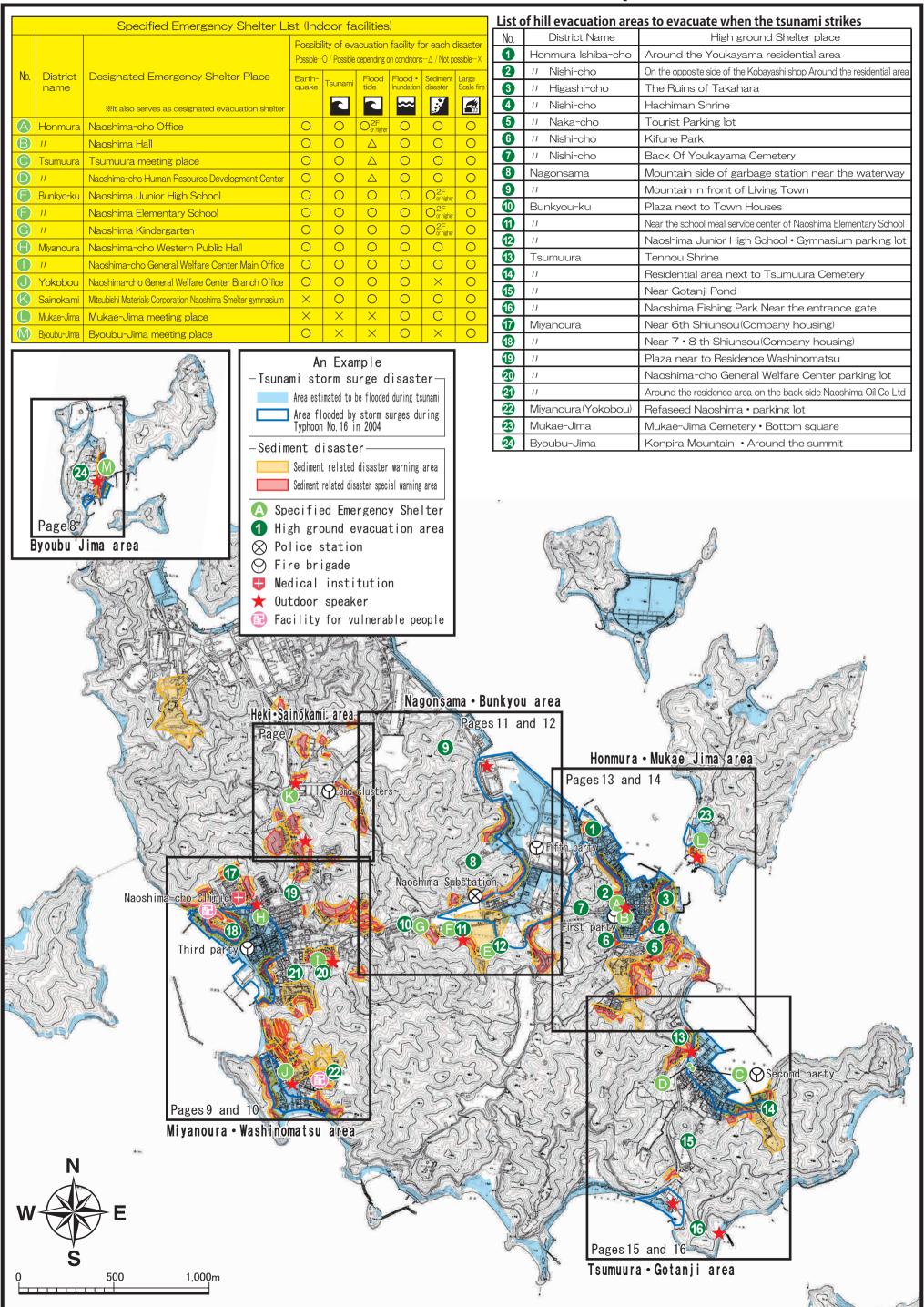
Inverse barometer effects / Wind blowing effects

Points regarding weather warnings, etc., and tsunami alerts, etc.

Types of alerts and warnings		Explanation
Heavy rains	Warning	Forecast that will be announced if there is an expected risk of disaster occurring due to heavy rain
	Alert	Forecast that will be announced if there is an expected risk of a severe disaster occurring due to heavy rain
	Emergency Alert	Forecast that will be announced if there is a remarkably large, expected risk of a severe disaster occurring due to heavy rain
	Warning	Forecast that will be announced if there is an expected risk of a disaster occurring due to abnormal elevated sea levels due to typhoons or low atmospheric pressure, etc.
Storm surges	Alert	Forecast that will be announced if there is an expected risk of a severe disaster occurring due to abnormal elevated sea levels from typhoons and low atmospheric pressure, etc.
	Emergency Alert	Forecast that will be announced if there is a remarkably large, expected risk of a severe disaster occurring due to abnormal elevated sea levels from typhoons or low atmospheric pressure, etc.
Landslide alert information		Disaster prevention information will be jointly announced by prefectures and the Japan Meteorological Agency for municipal mayors to make judgements when announcing alert level 4: evacuation instructions, and to serve as a reference for the independent evacuation of residents, when there is an increased danger of landslides occurring due to heavy rains
Record short time heavy rain information		Information that has recorded or analyzed severe heavy rain in a short period that occurs once every several years, when heavy rain alerts are announced
Information on remarkable heavy rain		Information that explains the status of extremely severe heavy rains continuing to fall in the same location due to a linear precipitation area, as the danger of a disaster occurring due to heavy rain suddenly increases, using the keyword "linear precipitation area"

Туре		Height of announced tsunami			
	Announcement criteria	Presented numerically	Announcement in case of a massive earthquake	Expected damage to occur and actions that should be taken	
Major tsunami alert	Height of forecasted tsunami exceeds 3m at its highest point	Exceeds 10m	Massive	Wooden houses will be completely destroyed and washed away, and people	
		More than 5m∼10m		will get caught in the flow of the tsunami. People near the coast and alc	
		More than 3m∼5m		rivers must immediately evacuate to a safe place, such as an elevated area.	
Tsunami alert	Height of forecasted tsunami exceeds 1m and is less than 3m at its highest point	More than 1m∼3m	High	Tsunamis will strike areas with low elevation and flooding will occur. People will get caught in the flow of the tsunami. People near the coast and along rivers must immediately evacuate to a safe place, such as an elevated area or evacuation building.	
Tsunami warning	Risk of disaster occurring due to tsunami when height of forecasted tsunami is 0.2m or more and 1m or less at its highest point	0.2m~1m	(Not displayed)	In the sea, people will get caught up in the quick flow, farming rafts will be washed away, and small boats will overturn. People in the sea should immediately get out and get away from the coast.	

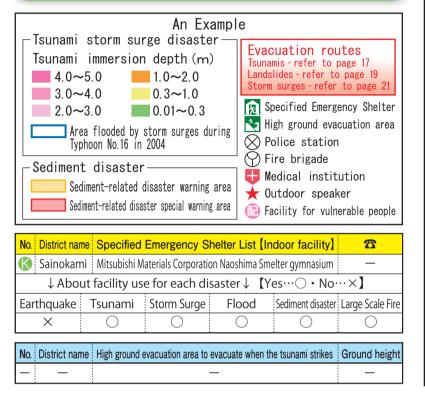
Naoshima-cho hazard map

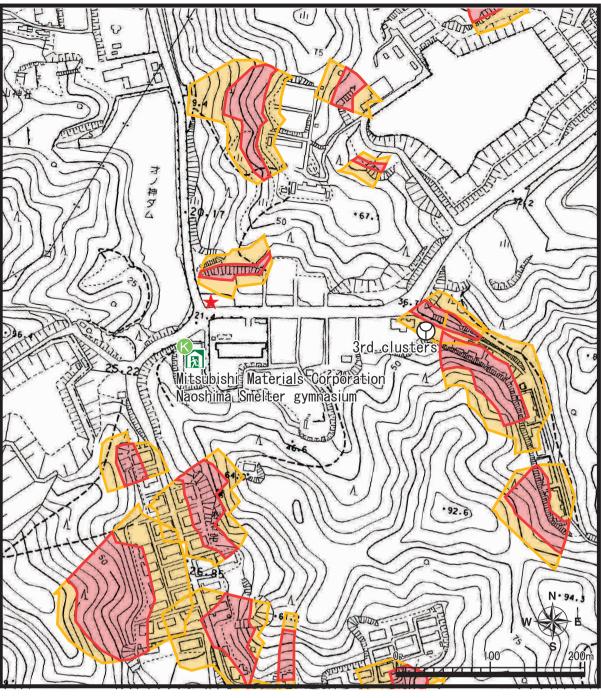


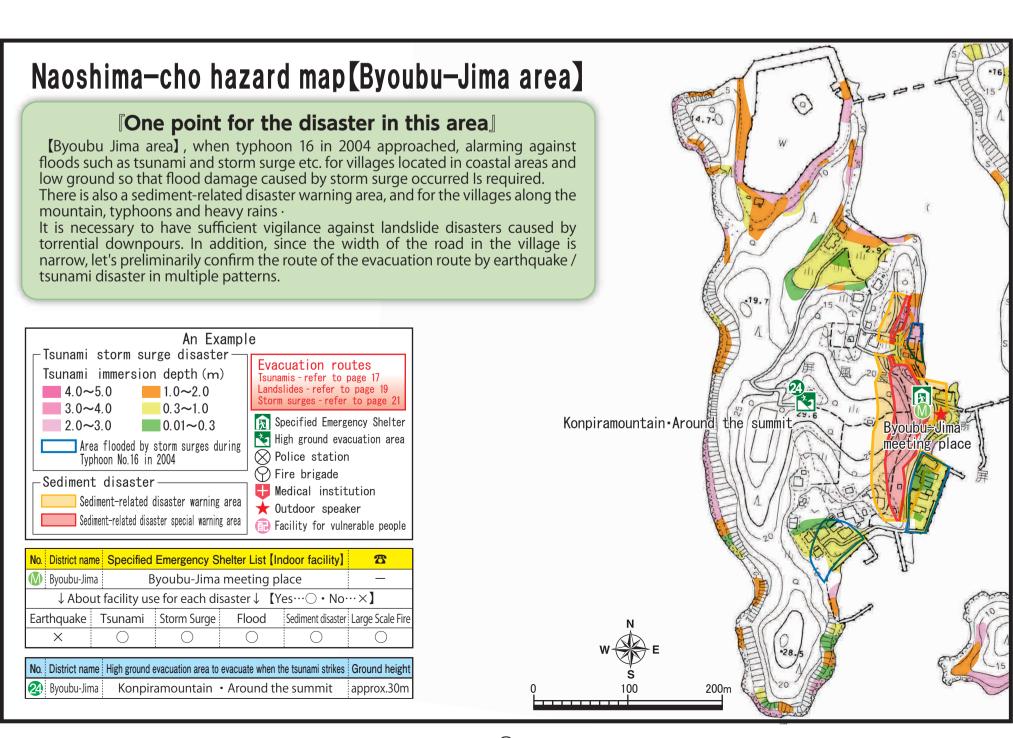
Naoshima-cho hazard map 【Heki·Sainokami area】

One point for the disaster in this area

[Heki / Sainokami area] is located in places where the residential area is approximately 20 m above sea level, there is no worry of tsunami, storm surge or the like. However, landslides of Ozaka settlements are landslides occurred when Typhoon No. 23 in 2004 approached, and they are also designated as a sediment-related disaster warning area. The backyard of the employee's dormitory in the former Heki district is also designated as a warning area, and sufficient vigilance is required against sediment-related disasters caused by typhoons, heavy rain, and torrential rain.







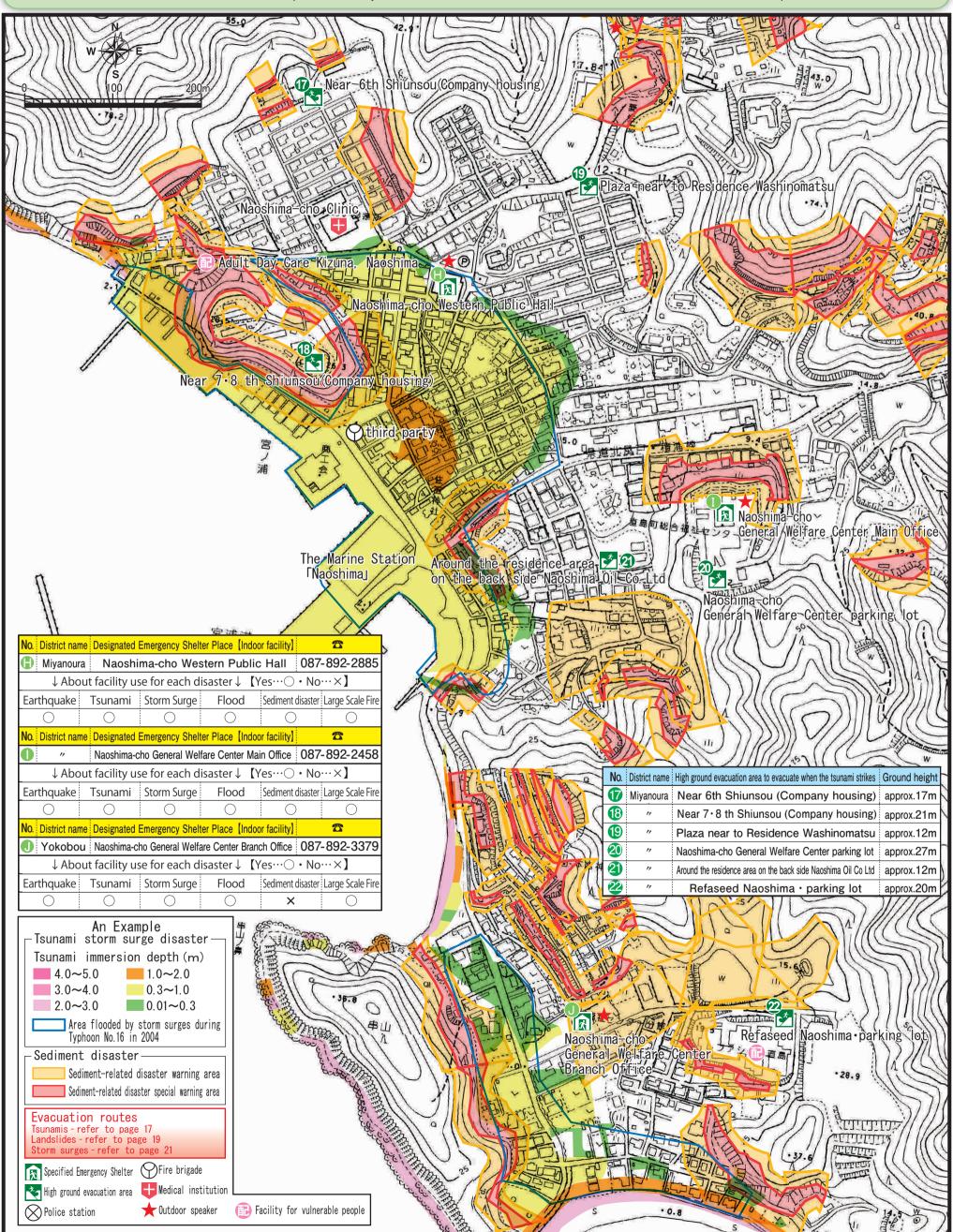
Naoshima-cho hazard map [Miyanoura·Washinomatsu area]

One point for the disaster in this area

The Miyanoura and Washinomatsu areas experienced flooding when Typhoon No. 16 approached in 2004, due to the storm surges over a wide area. Because of this, settlements on the coast and in low ground areas must be alert to floods caused by tsunamis and storm surges, etc.

In addition, when Typhoon No. 23 approached that same year, and during the heavy rains in west Japan in 2018, landslides also occurred in several locations in this area. Many of these hazard areas during landslide disasters are dotted throughout the map, so settlements along the mountains must exercise sufficient caution regarding landslides that occur along with typhoons and sudden heavy rain falls, etc.

These settlements also have areas with roads that are quite narrow, so you should check in advance several kinds of evacuation routes for when an earthquake or tsunami occurs.

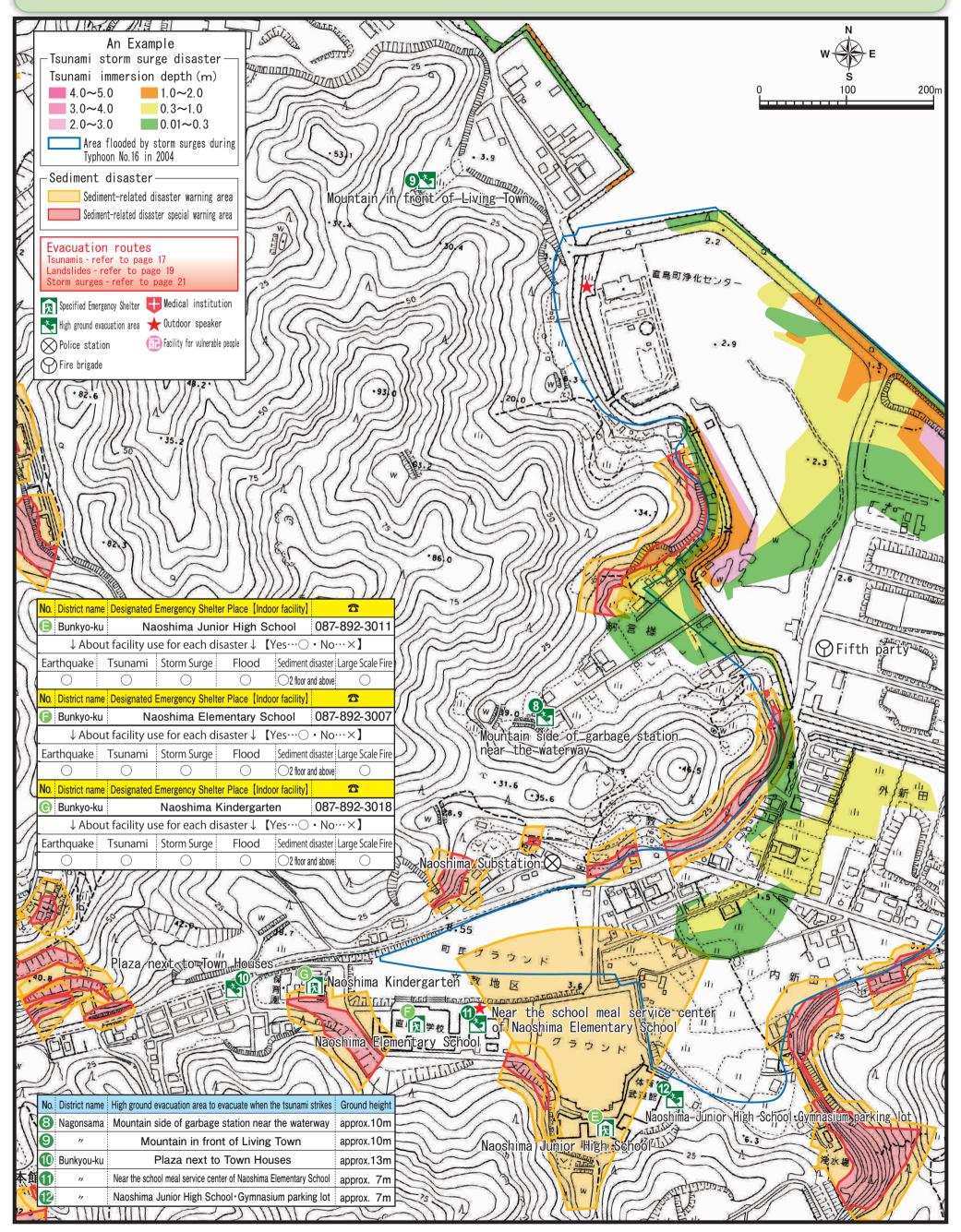


Naoshima-cho hazard map [Nagonsama·Bunkyou area]

[One point for the disaster in this area]

As for the village in the Nagonsama Bunkyou area and the ground where the coastal area and the ground are low, as in typhoon 16 of 2004 approaching, the flood damage caused by the storm surge occurred in a wide area as the occurrence of the tsunami / storm surge Vigilance against flooding is necessary.

Also, when Typhoon 23 of the same year approached, landslides occurred in several places, and many sediment-related disaster warning zones were also scattered in the district, so the typhoon, rainy season and concentration in the villages along the mountain. We need sufficient vigilance against sediment-related disasters caused by heavy rain. Besides this, there are also houses that have a distance to the hill evacuation site to evacuate from the tsunami, so let's try early evacuation behaviors.



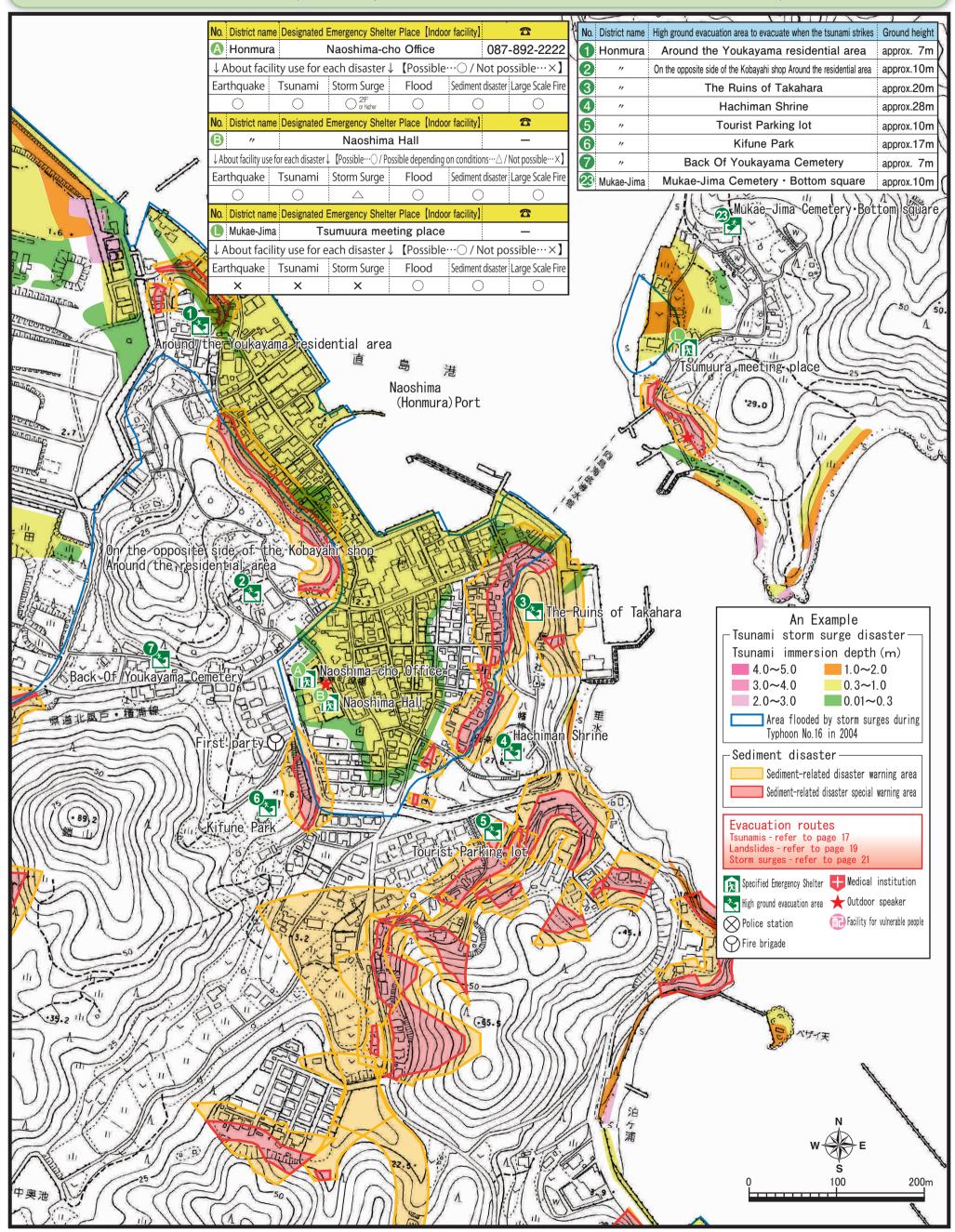
Naoshima-cho hazard map [Honmura·Mukae-shima area]

One point for the disaster in this area

The Honmura area experienced flooding when Typhoon No. 16 approached in 2004, due to the storm surges over a wide area. Because of this, settlements on the coast and in low ground areas must be alert to floods caused by tsunamis and storm surges, etc.

In addition, when Typhoon No. 23 approached that same year, and during the heavy rains in west Japan in 2018, landslides also occurred in several locations in this area. Many of these hazard areas during landslide disasters are dotted throughout the map, so settlements along the mountains must exercise sufficient caution regarding landslides that occur along with typhoons and sudden heavy rain falls, etc.

These settlements also have areas with roads that are quite narrow, so you should check in advance several kinds of evacuation routes for when an earthquake or tsunami occurs.



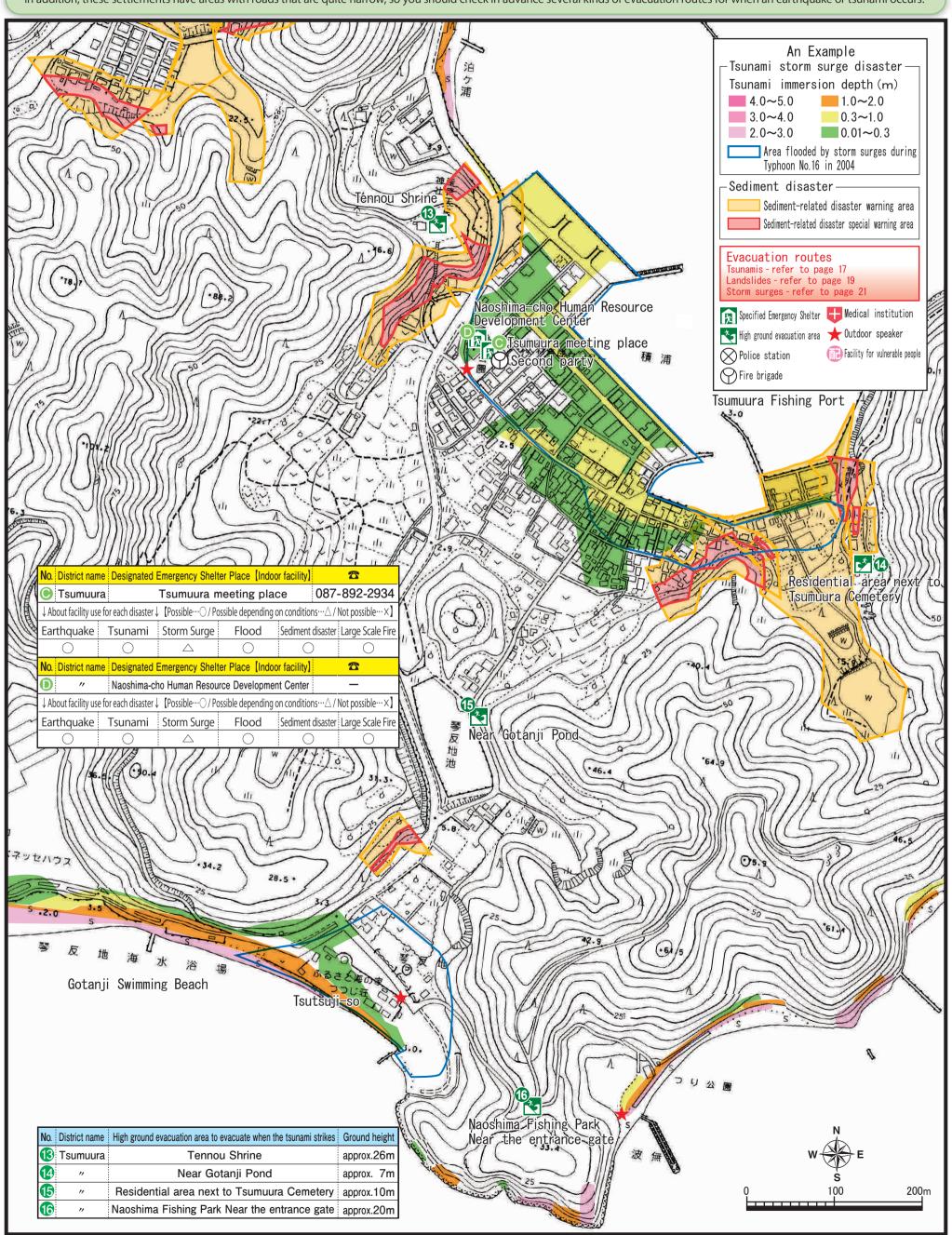
Naoshima-cho hazard map [Tsumuura·Gotanji area]

One point for the disaster in this area

The Tsumuura area experienced flooding when Typhoon No. 16 approached in 2004, due to the storm surges over a wide area. Because of this, settlements on the coast and in low ground areas must be alert to floods caused by tsunamis and storm surges, etc.

In addition, when Typhoon No. 23 approached that same year, and during the heavy rains in west Japan in 2018, landslides also occurred in several locations in this area. Many of these hazard areas during landslide disasters are dotted throughout the map, so settlements along the mountains must exercise sufficient caution regarding landslides that occur along with typhoons and sudden heavy rain falls.

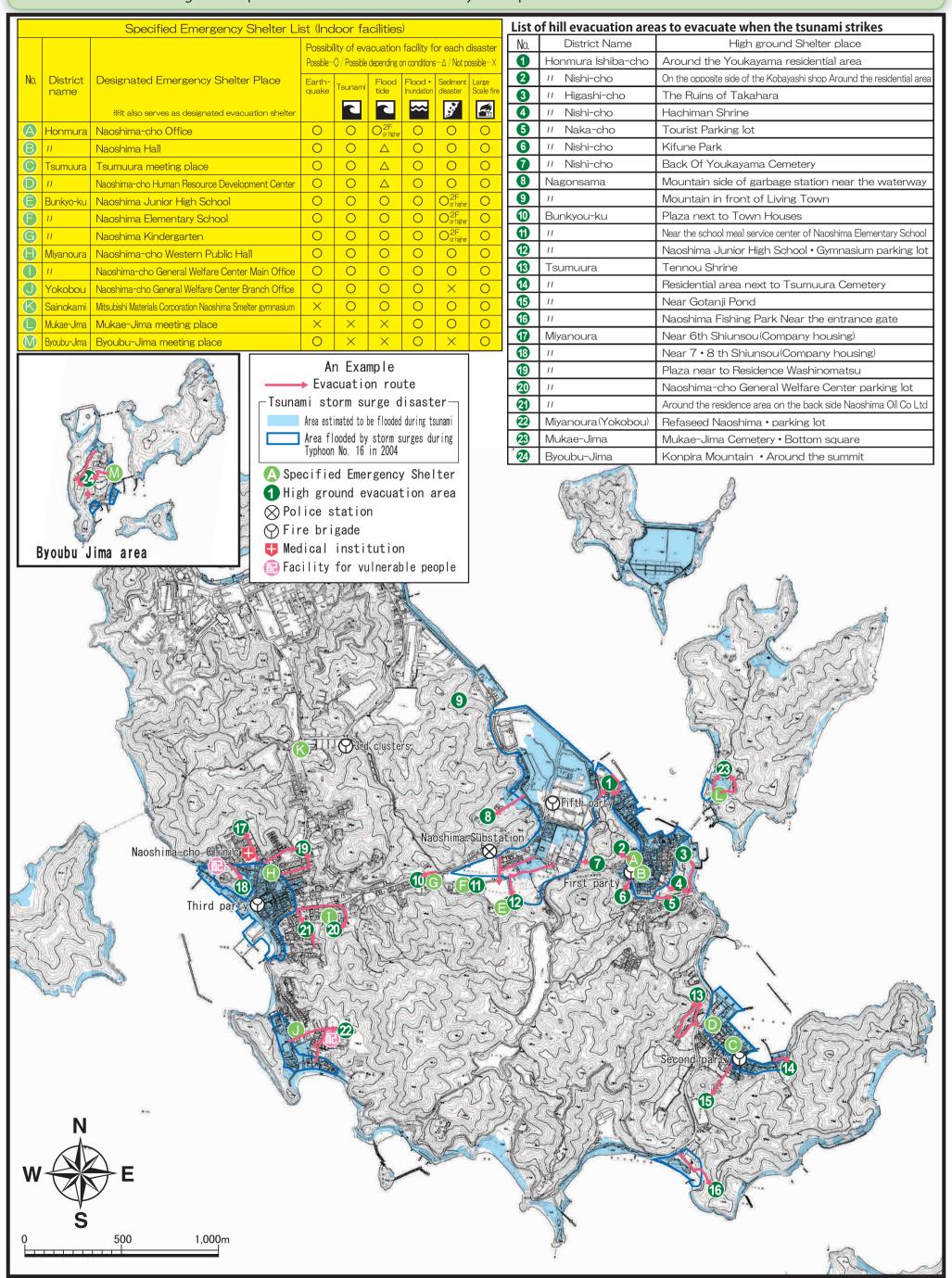
In addition, these settlements have areas with roads that are quite narrow, so you should check in advance several kinds of evacuation routes for when an earthquake or tsunami occurs.



Naoshima-cho hazard map [List of accused roads for tsunami disasters]

[Points you want to know to protect yourself from tsunami disasters]

If you feel a big shake on the coast, or if a tsunami warning or alarm is issued, let's evacuate to the hill immediately. Let's evacuate to a higher safe place without overconfidence only in the past inundation area and the assumed tsunami hazard area.



Naoshima-cho hazard map [List of evacuation routes for sediment-related disasters]

[Three points you want to know to protect yourself from landslide disasters]

In order to protect yourself from landslide disasters, it is important that each and every one of us keeps it ready. (Please check "3 points".)

1) Check if your home location is "Sediment-related disaster hazard".

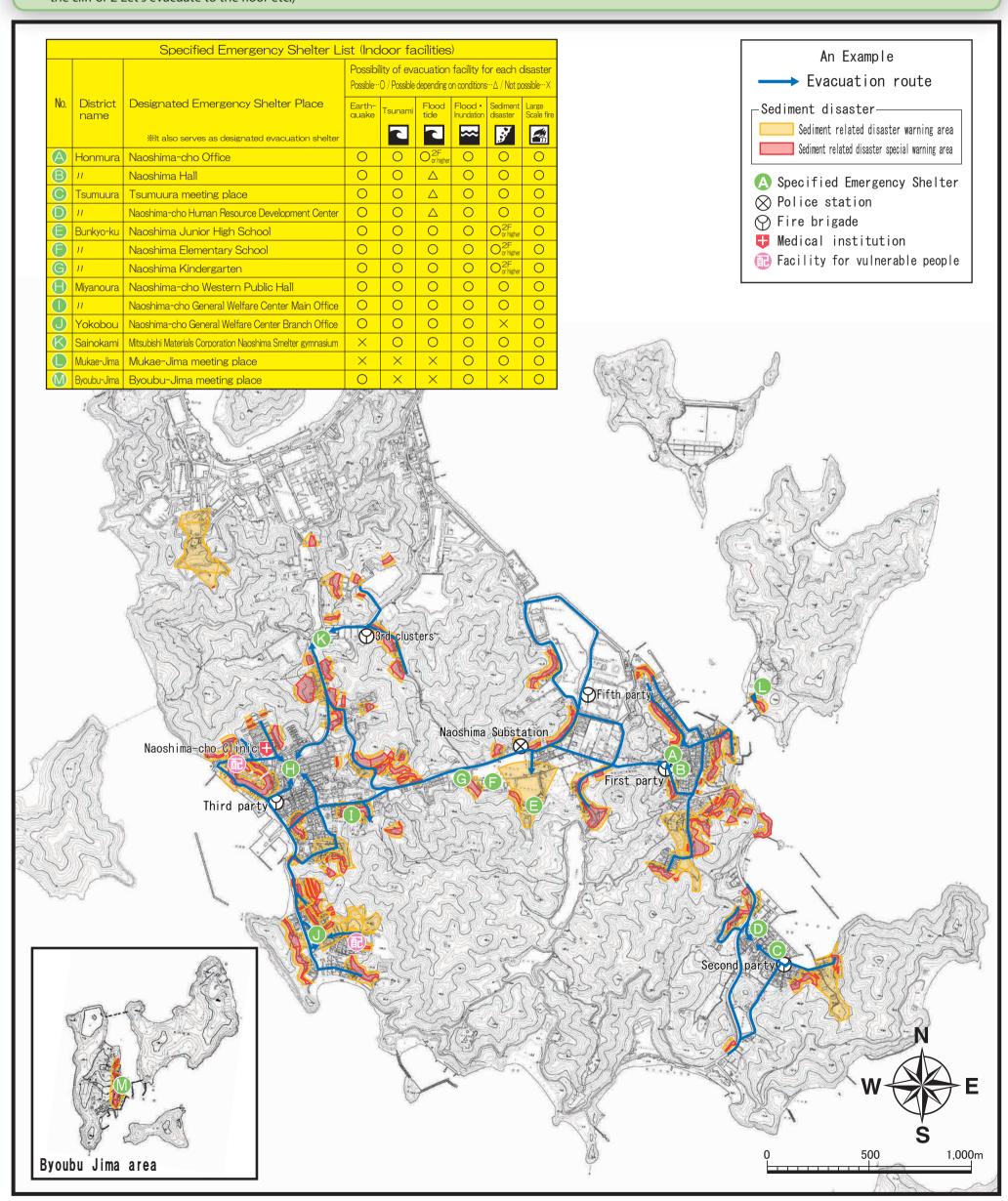
Let's check with yourself whether Kagawa prefecture or the information issued by Kagawa prefecture or town, etc.

② When heavy rain begins, pay attention to sediment-related disaster warning information.

This information is disaster prevention information that Kagawa Prefecture and the local meteorological observatory jointly announce. In addition to the weather stations and the prefecture's homepage, you can check it on TV and radio etc.

3 When sediment-related disaster warning information is announced, evacuate early.

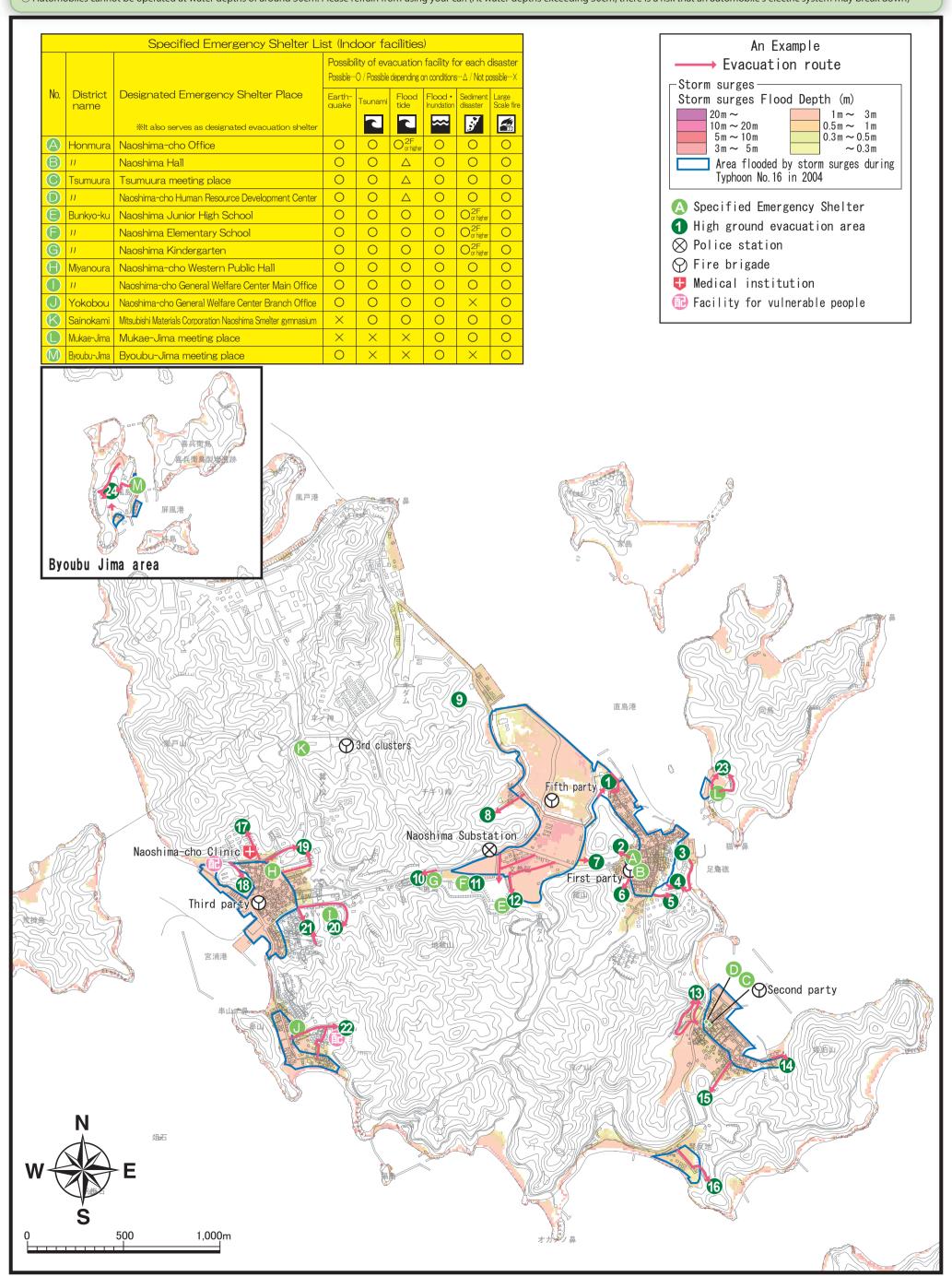
Let's evacuate to a safe place such as a nearby evacuation place as soon as information is released from the weather stove to the town. In addition, it is important for people who take time to evacuate such as the elderly and people with disabilities to evacuate early in consideration of traveling time. Also, when it is difficult to evacuate to evacuate to evacuate to the second floor of a nearby heavy-duty building or it is difficult to do so, a safer place in the house (a room away from the cliff or 2 Let's evacuate to the floor etc.)



Naoshima-cho hazard map [List of evacuation routes for storm surges]

[Points you should know to protect yourself from storm surges]

- When storm surges alerts, etc., are issued, evacuate while referring to the maps of areas flooded by storm surges in Typhoon No. 16 in 2004, and the maps of areas estimated to be flooded during storm surges.
 At water depths of around 30cm, you will be unable to evacuate (move). Prepare to move in groups of 2 or more people in comfortable clothes. Evacuating on foot becomes difficult when the water depth is 1m or more.
- Automobiles cannot be operated at water depths of around 30cm. Please refrain from using your car. (At water depths exceeding 30cm, there is a risk that an automobile's electric system may break down)



Disaster prevention related organization contact list

No.	Report • Inquiry Content	Affiliated organization name Contact Information(ঞ)	No.	Report • Inquiry Content	Affiliated organization name Contact Information(☎)
0	Fire/Other disasters	Naochima-cho Office•General Affairs Section From fixed-line phone ☎119 From mobile phone ☎087-892-2222	6	Message Dial (After the disaster)	Nishinihon Telegraph Telephone Company (NTT) &171
2	Emergency Naoshima-cho Fureai Clinic	Gas Breakdown	Kimura Propene ☎087-892-2524		
O	(Sudden illness•Injury)	☎087-892-2266		Gas Breakdown	Naoshima Sekiyu ☎087-892-3288
8	Water Outage• Failure of water pipe	Naoshima-cho Office • Environmental Water Supply Section	8	Accidents etc.	Kagawa Prefecture Headquarters Telecommunications Dispatch Office ☎110 (No area code)
		☎087-892-2225			Takamatsu Kita Police Station
4	Black out•	Chugoku Electric Power Transmission & Distribution Co., Inc.			Naoshima Substation ☎087-892-3013
	Electricity breakdown	Okuyama Network Center ☎0120-411-353(Toll Free)			Japan Coast Guard ☎118
9	Telephone breakdown	Nishinihon Telegraph Telephone Company (NTT) ☎113	0		Takamatsu Maritime Security Division ☎087-821-7013
					Tamano Maritime Security Division ☎0863-31-3423

About providing information on the Internet

Information Content	Institution name	Content of information provision
Disaster prevention weather information in the prefecture	Takamatsu Local Meteorological Observatory	Weather related warnings, earthquake and tsunami information etc can be confirmed http://www.jma-net.go.jp/takamatsu/
Kagawa Disaster Prevention Web Portal	Kagawa Prefecture	Check "Information Related to Disasters and Disaster Prevention in Kagawa Prefecture" and so on at this website. http://www.bousai-kagawa.jp/

(Inquiries on this map and disaster prevention) Naoshima-cho office-General Affairs Section 2087-892-2222