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RE: Gedling Borough Council Local Development Plan: Reg 19 Documents

To whom it may concern,

We are writing to you regarding the Gedling Borough Council Local Development Plan: Reg 19 documents on behalf of Linby Parish Council. The Environmental Protection Group (EPG), who are acting as a specialist flood risk and drainage consultants, have been appointed by Linby Parish Council to undertake a third-party review of the information submitted to date. As such we provide the following response for your review and consideration.

We understand that various sites are undergoing consultation for inclusion in the Local Development Plan, the sites immediately impacting Linby are:

1. Top Wighay Farm, Safeguarded Land, Linby (880 dwellings, 52.28ha)
2. Top Wighay Farm, Employment Site, Linby (805 dwellings, plus employment land, and a new school, 6.5ha)

All the sites mentioned above are in Flood Zone 1, with hot spots of high surface water flood risk within the boundary allocation. Whilst discussion on the flood zones has been included in the documents, no discussion on pre-development and post-development surface water flood risk has been provided.

Given that surface water flood risk accounts for 73% of all flood affected properties, this should be a priority when allocating sites, with specific attention on post-development surface water flood risk to both the site and the surrounding area. This should include pre-development and post development flood exceedance routes, as well as how surface water flood risk is managed through regular SuDS interventions and proposed discharge rates, less than or equal to the existing greenfield runoff rates.

Existing Drainage

A review of the existing drainage networks has been undertaken to understand the likely outfalls for the proposed development sites, as well as identify any potential bottlenecks that may impact on the development proposals.

The village of Linby is served by a network of riparian ditches (surface water), and Severn Trent Water Sewers (foul water, and surface water). The drainage network runs through the centre of Linby and ultimately drains to the River Leen. The development sites mentioned above, and if permitted, would most likely drain to these same drainage networks.

The surface water networks have been subject to additional stress following the recent development at Top Wighay, it is understood from a site visit that the additional stress imposed on the surface water network has been due to increased silt runoff from the development sites, causing increased blockages within the outdated drainage network. A CCTV survey has been carried out on the existing networks, which shows the drainage networks to be damaged and undersized in various locations, reducing the overall capacity and causing bottlenecks at key locations. As a result of this damage, and increased silt runoff, the drainage networks have faced recent surcharges and localised flooding, impacting on the safety of road users along Main Street, as well as the properties immediately adjacent and downstream.

Historical Flood Risk

The Environment Agency historical flood data shows historical flooding events along the River Leen, between Papplewick Lane and Linby Lane. This is the point in which the ditch network through Linby connects to the River Leen, passing through a culvert network at road crossing points.

Outside of the recorded datasets, residents have provided evidence showing flood events in: January 2025, September 2024, February 2024, December 2023, October 2023, and February 2020. A selection of photos of these flooding events can be found below:

Figure 1: January 25, Flooding at Quarry Lane

Figure 2: Sept 24, Flooding at Main Street

Figure 3: September 24, Flooding at Linby Lane

Figure 4: Oct 23, Flooding at Main Street

The evidence above shows the extent of the flooding issues within Linby over the last 5 years. Whilst climate change increases this flood risk, it is believed that the main issues arise from the outdated nature of the drainage networks, as well as the increase in flow as a result of recent developments increasing the volume of surface water entering this network. For context, under a separate appointment, EPG reviewed the drainage proposals at the Top Wighay development (Ref. 2026/0179), which showed an increase in post-development runoff of 330%, subsequently increasing the flood risk in the already constrained catchment.

The flooding issues experienced, and shown above, have previously caused property floods, as well as road closures due to safety concerns along Main Street. Therefore, any developments within the area that discharge into the existing drainage network, should be developed with key consideration around the downstream network. It is also advised that the existing drainage network be hydraulically reviewed further to identify where bottlenecks occur and subsequently increase flood risk. Likewise, consideration around upgrading the existing network should be undertaken. However, given that the recorded flood event at the River Leen has been identified, it is likely that upgrades upstream may increase flood risk along the River Leen, between Main Street and Papplewick Lane. Therefore, the best opportunity to reduce the existing flood risk identified would be to ensure that new developments in the catchment ensure that discharge rates are less than the existing greenfield runoff rate, with a supporting and suitably sized SuDS scheme. In effect this will reduce the amount of surface water entering the existing network, providing more flood resilience for the properties and road networks within this catchment. Should this approach not be taken, flooding incidents and extent would likely become more frequent as well as impact more properties adjacent to the drainage network and River Leen.

Proposed Criteria for New Developments

Considering the flooding incidents recorded within Linby, as well as the nature of the existing drainage network, we propose that any new developments within the catchment meet the following criteria:

- Follow the NPPF drainage hierarchy, ensuring that new developments drain surface water in order of:

    1. Collection for non-potable re-use (where possible new developments should collect rainwater for re-use)
    2. Infiltrate surface water into the ground (all new developments should provide site specific infiltration tests to confirm whether infiltration is a viable means of discharge, where infiltration rates are recorded >$1x10^{-6}$ infiltration should be the primary means of surface water disposal)
    3. Discharge into a surface water body (the location of discharge should be as per the existing runoff route and less than the greenfield runoff rate)
    4. Discharge into a surface water sewer (capacity to be confirmed by Severn Trent Water prior to approval)
    5. Discharge into a combined sewer (capacity to be confirmed by Severn Trent Water prior to approval)

- Where infiltration is not viable, the developments drainage strategy should look to restrict flows to less than the greenfield runoff rate. Greenfield runoff rate calculations should be provided for all new developments and verified by a suitably qualified third party. Runoff should be limited to a max of 1.8l/s/ha of development area, including landscaping. Greenfield runoff rates should be calculated using the FEH Statistical (2025) method.
- Supporting pre-development and post-development flood exceedance route plans should be provided indicating the runoff route and discharge strategy remain as per the existing sites – evidencing the development does not propose to change the ultimate discharge location.
- A detailed SuDS strategy should be provided for all new development applications, indicating the SuDS strategy across the development. Green infrastructure should be prioritised wherever practicable, and SuDS systems should be provided throughout the development for inception, attenuation and treatment of intended pollutants. This strategy should include evidence that the proposed treatment train is suitable to mitigate the anticipated pollutants.
- The site-specific drainage strategy should include suitably sized attenuation features to contain runoff from all sources for storm events up to and including the 1 in 100-year storm event, plus a 40% allowance for climate change, and a 10% allowance for urban creep on hardstanding areas. Drainage should be sized using FEH 2025 data, with modelling outputs verified by a suitably qualified engineer.

The proposed criteria suggested above should not be ignored, as the existing flooding events recorded depend upon robust drainage principles within the proposed developments. Where developments do not meet the above principles, it is likely to increase the frequency and extent of flooding within the Linby drainage catchment. Where the above principles cannot be met, a supporting statement should be provided clarifying why the development cannot meet the criteria, Including the chosen discharge methodology.

Policy GLDP20-Blue-Green Infrastructure, Parks and Open Spaces

We have reviewed policy GLDP20, the policy outsides a high-level approach which should be taken for new development sites. The targets within the policy should look to enforce the delivery of blue-green infrastructure, outlining early consideration within development masterplans. The policy currently states that where blue-green infrastructure cannot be delivered offsite measures may be acceptable. Where developments proceed and offsite blue-green infrastructure is permitted, this may have an adverse effect in regard to flood risk. Blue green infrastructure is required within development proposals to counteract the urbanisation impact the developments have, therefore we would advise that offsite measures not be considered as acceptable, or where special circumstances arise blue-green infrastructure should be located within the same catchment as close to the development area as possible. Suitable evidence in the form of hydraulic modelling should show that flood risk reduction is applied to the site to ensure that existing flood risk is improved and that the proposed developments will not have an adverse impact on existing flood risk.

Conclusion

The development locations are suitable in principle, given they are located within flood zone 1. However, the information available to date lacks significant detail around the overarching SuDS strategy, discharge methodology and potential impact on the existing drainage catchment.

In principle the developments can proceed, from a flood risk perspective, provided they meet the suggested criteria outlined above. To summarise, future developments should consider:

- Reduced discharge rates, <1.8l/s/ha (where infiltration is not viable, to be backed up by onsite infiltration testing and supporting correspondence from a suitably qualified engineer).
- Prioritised rainwater re-use where practicable
- Consistent Blue-Green infrastructure built into early master planning, minimising below ground systems where viable
- Pre-development and post-development flood routing plans to inform the proposed outfall locations.
- Where outfalls drain into existing drainage networks, capacity should be confirmed and approved in writing by a suitably qualified engineer.
- Futureproofed Hydraulic calculations, considering climate change, urban creep, for storm events up to 1%AEP
- Suitably sized SuDS features, sized using FEH 2025, with Cv 1.0 and up to the 1%AEP storm event.

Policy GLDP 20 looks to encourage the use of blue-green infrastructure, however the opportunity to provide blue-green infrastructure outside the site should be omitted from the policy. Blue-green infrastructure looks to offset the impacts of urbanisation incurred by new developments, as such providing offsite measures may not be suitable, and subsequently have adverse impacts on flood risk. All new developments should look to implement blue-green infrastructure into early masterplanning; the proposals should look to intercept rainwater as close to the source as possible. This can be delivered through roadside swales, tree-lined avenues, roadside raingardens, and attenuation basins in series. Developments should avoid 'pipe-to-pond' solutions, whereby all runoff is directed through piped systems into an attenuation system at the low-point. Instead, developments should provide holistic and regular interventions throughout the masterplan. This in turn will promote losses through infiltration and evapotranspiration, increasing flood resilience, whilst also offering greenspace throughout the development supporting general wellbeing and biodiversity.

It is recommended that prior to any development approval, a suitable SuDS scheme and statement is submitted and approved by a suitably qualified engineer. The information should look to evidence that suitably sized SuDS features have been built into early development masterplanning. This should be supported by hydraulic calculations and onsite infiltration tests, to confirm the correct discharge and rainfall methodology has been used and as such the development proposals will not exacerbate flood risk in the catchment. All developments should look to consider the impact on existing downstream catchments, and where historical flood risk is evidenced, the development proposals should look to reduce to ensure the safety of the development and the downstream areas.

Kind Regards,

George Grant IEng MICE,
Head of Engineering and Water, The Environmental Protection Group